



{In Archive} 2011 Annual Report for the Vogel Site
Drstrup, Bob [DNR] to: Jim Colbert

03/07/2012 03:31 PM

From: "Drstrup, Bob [DNR]" <Bob.Drstrup@dnr.iowa.gov>
To: Jim Colbert/R7/USEPA/US@EPA
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Hi Jim,

Haven't talked with you for a while. How's it going?

Attached is the 2011 annual report for the Vogel site for your review and comment. Please send your comments to me by March 30th.

Thanks,



Bob 2011 Vogel's Annual Report.pdf

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**2011
ANNUAL REMEDIATION & GROUNDWATER
MONITORING REPORT**

**VOGEL PAINT & WAX CO. SITE
MAURICE, IOWA
February 2012**

**PREPARED BY: GEOTEK ENGINEERING & TESTING SERVICES
SIOUX FALLS, SOUTH DAKOTA**

GEOTEK #91-400

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1. Introduction

This remediation and annual groundwater monitoring report is provided in compliance with the requirements and conditions contained in the following documents: Iowa Consent Order No. 2003-HC-02; the 2005 Revised Groundwater Monitoring Plan approved by Iowa Department of Natural Resources (IDNR) in letters dated September 22 and November 22 and 28, 2005. In lieu of quarterly monitoring reports, a comprehensive annual monitoring report and electronic submittal of all current (e.g., quarterly) monitoring results is acceptable. The IDNR also agreed to semi-annual submittal of the contamination plume maps.

The September 22, 2005 IDNR letter stated: "In accordance with Article VI., Item 6.a. of the 2003 Consent Order, operation of the groundwater treatment system is not required at this time." To evaluate the migration of the contamination plume under natural groundwater conditions, Vogel's did not operate the air stripper system during the past 7 years; however, pumping for irrigation was conducted.

In July 2007, Vogel's implemented a Phytoremediation Pilot Study. The study consisted of the planting of 750 trees over a 1-acre portion of the contaminated soil and irrigating the trees with contaminated groundwater from monitoring well GMW-33 and recovery well RW-104. The initial phase of the study ran from July 2007 through freeze-up in November 2007. In May 2008, 1,800 trees were planted on an additional 2.5 acres north of the 2007 planting. The trees planted in 2008 were planted in the area where soil from prior remedial measures containing elevated levels of lead was placed. Irrigation water for the phytoremediation trees was applied during the 2007, 2008 and 2009 growing seasons. Limited irrigation (2 days) for replacement trees was completed in 2010 and no irrigation water was applied in 2011.

The following is a summary report on groundwater monitoring conducted from January 2011 through December 2011 to evaluate the groundwater contamination plume at the Vogel Paint & Wax Co. site near Maurice, Iowa. Figure 1 is a site map showing the locations of the monitoring wells and Figure 2 is a topographic survey of the site.

2. Groundwater Gradient

Shallow Aquifer

Two aquifers are present below this site, a shallow aquifer and a deep aquifer. The shallow aquifer flows north from near GMW-21 and northeast from the two private wells west of the site, the Neiss and Bos wells. The shallow aquifer is approximately 7' below grade (bg) near TC-7, near the creek that flows northeast near the north boundary. The shallow aquifer is 16' to 18' bg at GMW-13 and GMW-14. The shallow aquifer is 12' to 13' bg in the two private wells located west of the site. The shallow aquifer begins near GMW-20. Cross-section drawings depicting the geology of the site based on the current assessment drilling are available in the 2005 Annual Comprehensive Groundwater Monitoring Report. The cross-sections indicate that the upper alluvial sand containing the shallow aquifer slopes to the north.

The shallow aquifer and the deep aquifer commingle near GMW-14 where the contamination plume begins to migrate south in the deep aquifer. The deep aquifer has a greater influence on the groundwater gradient where the two aquifers commingle. The historical groundwater data strongly indicates that the groundwater contamination plume migrates to the south in the deep aquifer. In over 20 years of sampling, the northern perimeter wells in the shallow aquifer have had negligible concentrations of contaminants. The contamination detected in the northern perimeter wells occurred during the soil excavation phase of the project in 1995 and 1997. Runoff entering the excavation likely caused a slight reversal of the groundwater gradient to the north resulting in low concentrations of contaminants. The shallow aquifer water levels in September 2011 were approximately 2 feet lower than in October 2010.

Deep Aquifer

The deep aquifer flows to the south-southeast and originates near GMW-14 where it merges with the shallow aquifer. It is approximately 25' bg at GMW-14 and 57' bg at GMW-24. The deep aquifer flows in a 5' to 15' thick stratum of outwash sand below 20' to 50' of glacial till. The outwash sand is present in all of the wells south of GMW-14. Figure 3 is a groundwater gradient map developed from water level data collected from the deep wells on December 9, 2011. Recovery wells RW-102, 103, 104 & 105 were last pumped to the stripper tower in December 2004. In addition, the phytoremediation irrigation system has been off line since November 2009 and only passive remediation [phytoremediation and monitored natural attenuation (MNA)] is occurring at this time.

The deep aquifer gradient across the site is south-southeast towards the Floyd River. The aquifer gradient drops approximately 1' in 500', a gradient of 0.002. The 2011 annual rainfall of 18.29" for Sioux County, Iowa was approximately 9" below normal. The water levels in the deep aquifer decreased approximately 1.5 to 2 feet from December 2010 to March 2011. A slight rise in the water table, approximately 0.5 to 1 feet, was noted from March to June 2011. The water table then dropped for the remainder of 2011. The water levels on average dropped approximately 3 feet from June to December 2011.

3. Groundwater Analytical Data

Table 1 contains a summary of accumulated groundwater monitoring analytical data, including the data from 2011 monitoring events. The annual groundwater monitoring event was completed on September 27, 2011. The most recent quarterly monitoring event occurred on December 9, 2011. The laboratory analytical report for the December 2011 monitoring event is provided in Appendix A. The data from the September 2011 monitoring event was provided in GeoTek's October 27, 2011 report.

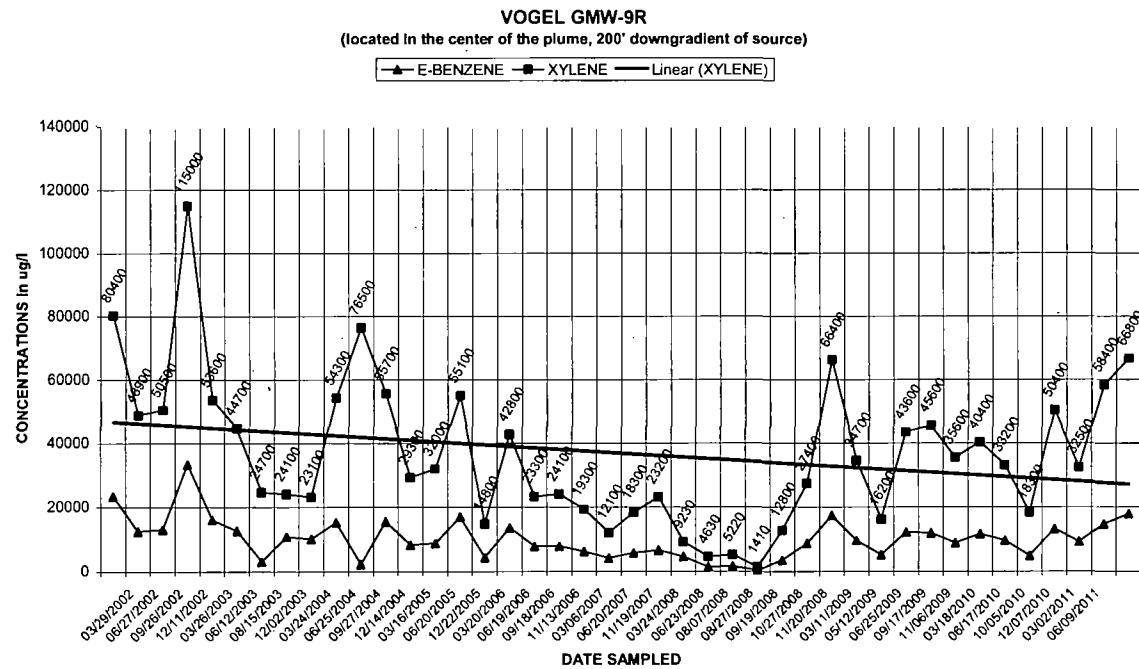
Figures 4, 5, 6 and 7 show the estimated xylene, ethylbenzene, toluene and benzene plumes based on the September and December 2011 analytical data. Figure 8 is a topographic map showing the approximate extent of the xylene plume in relation to the Floyd River and the Southern Sioux Rural Water System (SSRWS) water supply wells. The SSRWS wells are located in the extreme northeast corner of section 5, the extreme southwest corner of the northwest ¼ of section 4 and the northwest ¼ of section 8, T93N R45W, Sioux County, Iowa. The SSRWS wells are approximately 8,500' to 10,000' down gradient of the plume.

The following is a discussion of the contaminant concentrations detected in key monitoring wells. The discussion begins with the northern most wells and continues with the wells to the south.

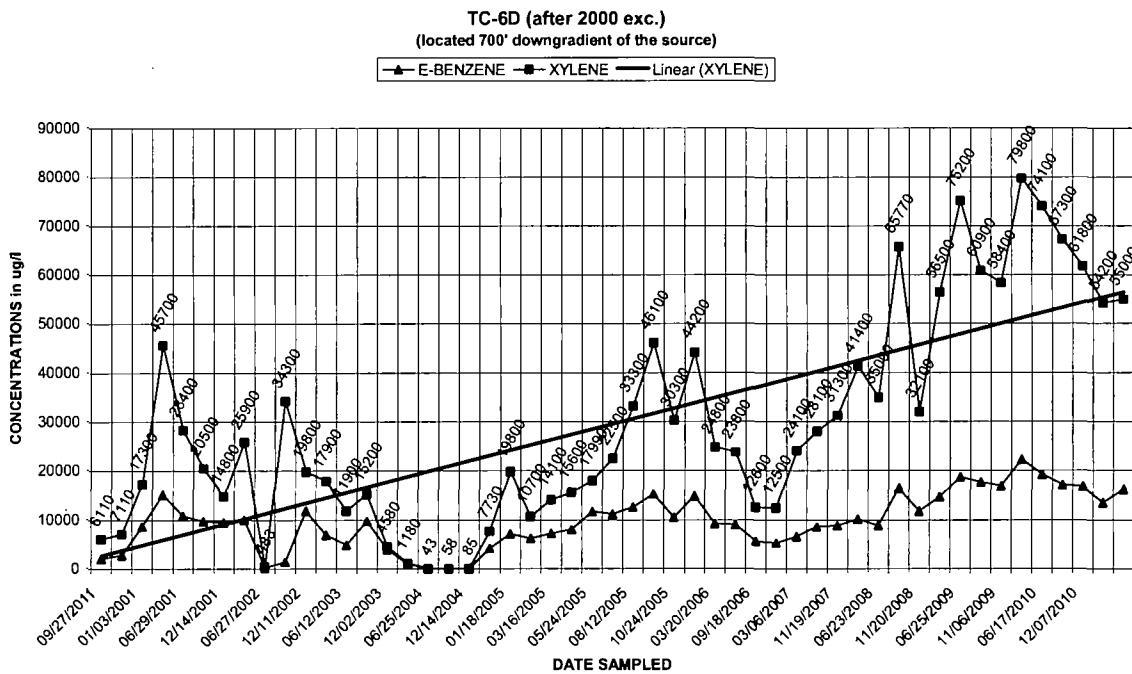
GMW-9R, GMW-13, MW-4R, and TC-6D (Source Wells)

These wells are source wells. They are located in the heart of the contamination plume. GMW-9R is located approximately 200' south and downgradient of the disposal area. GMW-13 and GMW-14 are located in the former 4-acre disposal area where solvent accumulated. MW-4R (MW-4 on site maps) is approximately 500' downgradient of the disposal area and has generally had measurable free product since installation in 1985. The product thickness at MW-4R was 2.40 feet on October 6, 2011 and 0.79 feet on December 9, 2011. TC-6D is located approximately 700' south of the disposal area. The xylene concentrations on December 9, 2011 in GMW-9R and TC-6D were 66,800 ppb and 55,000 ppb, respectively.

In general, the concentration trend at GMW-9R is downward. The following is a graph of the accumulated xylene and ethylbenzene analytical data from GMW-9R:

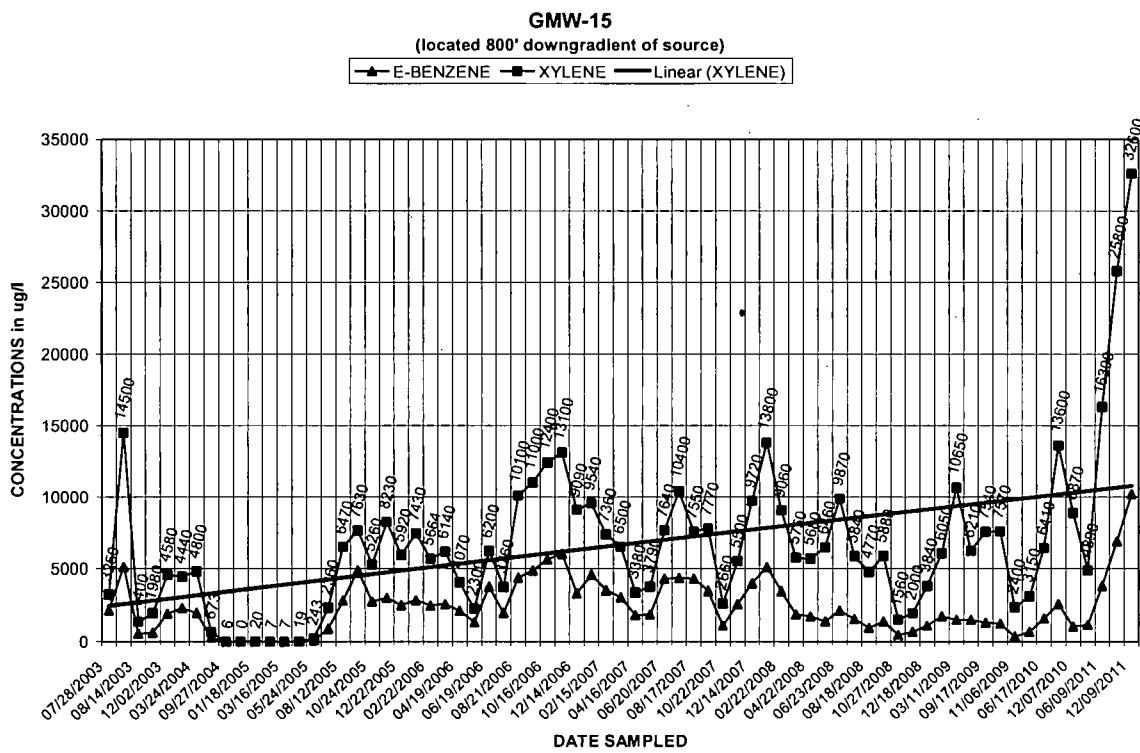


Significantly low concentrations were present in TC-6D in 2004 (see graph below). This well is located within 10' of recovery well RW-104. It appears that during the pumping cycle, clean water was drawn into this recovery well from the east diluting the contamination and lowering the concentrations detected in TC-6D. When the pumping ceased, the dilution stopped and the contamination concentrations rebounded. An increasing trend in xylene concentrations over time is apparent. The highest xylene concentration was noted in October 2010. Since October 2010, the xylene concentrations have been steadily decreasing.



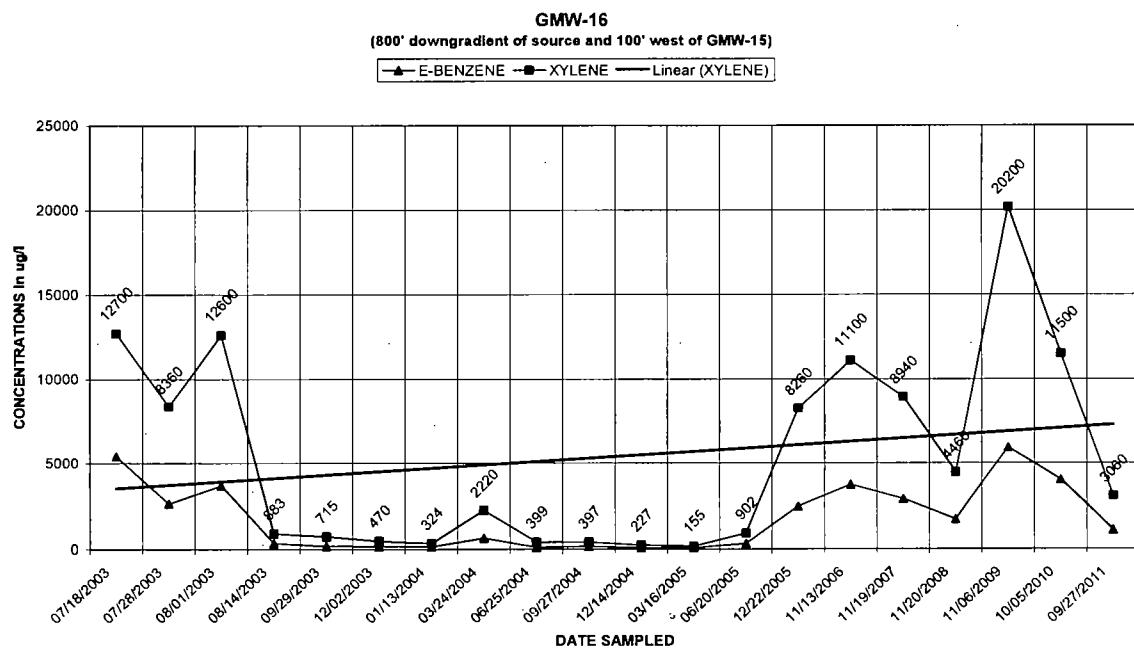
GMW-15

This well is located approximately 800' south and downgradient of the disposal area. Similar to TC-6D, a general downward trend in the contaminant concentrations also occurred in this well when the recovery wells were pumping during 2004. Since turning off the recovery wells in December 2004, the concentrations showed a steady increase. The results of the 2011 quarterly monitoring at GMW-15 indicate a significant increase in the xylene and ethylbenzene concentrations. The December 2011 concentrations are the highest noted to date at this well. Similar significant increases in contaminant concentrations are not apparent at wells downgradient of GMW-15, such as GMW-17, GMW-20 and GMW-7R.



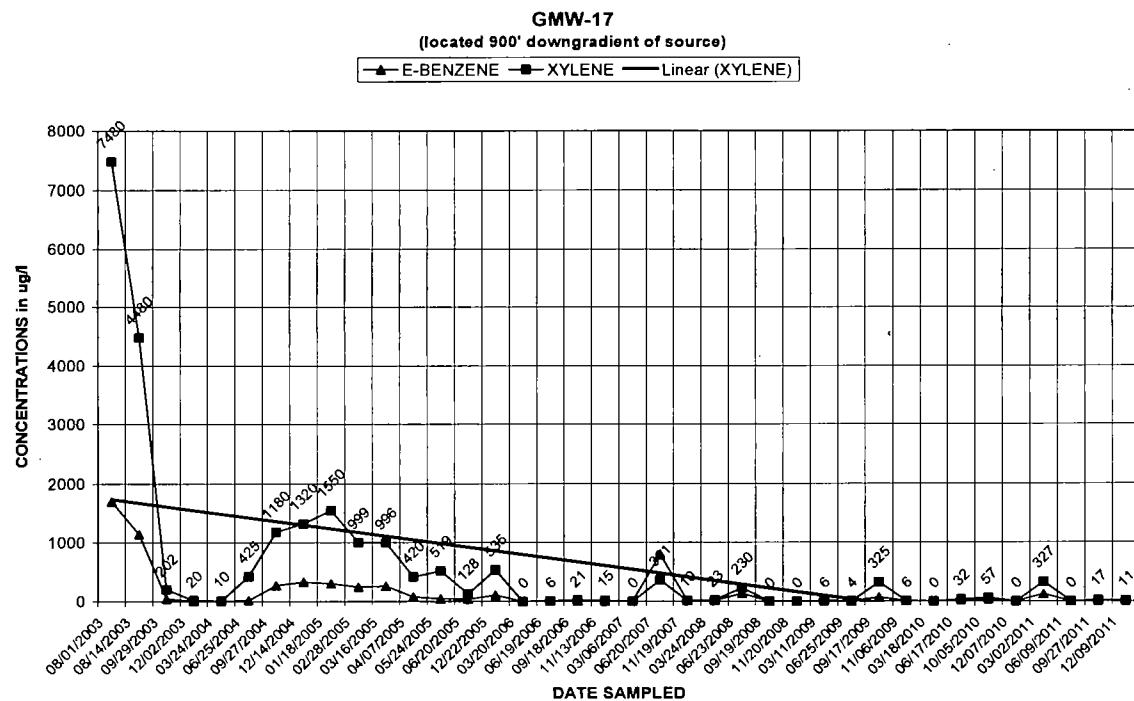
GMW-16

This well is located approximately 100' west of GMW-15. The concentrations in this well show a slight upward trend. GMW-16 is sampled on an annual basis. The xylene and ethylbenzene concentrations at GMW-16 appear to have peaked in 2009, with decreasing concentrations noted in 2010 and 2011. The xylene concentration on September 27, 2011 was 3,060 ppb, the lowest noted at this well since June 2005. The following graph illustrates the ethylbenzene and xylene concentrations over time.



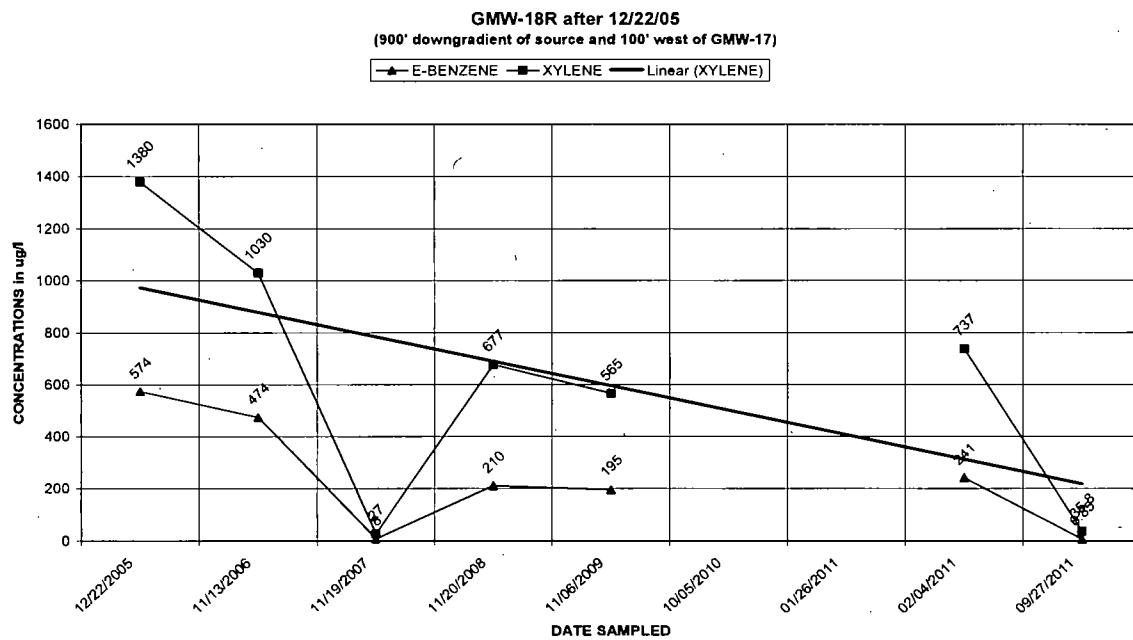
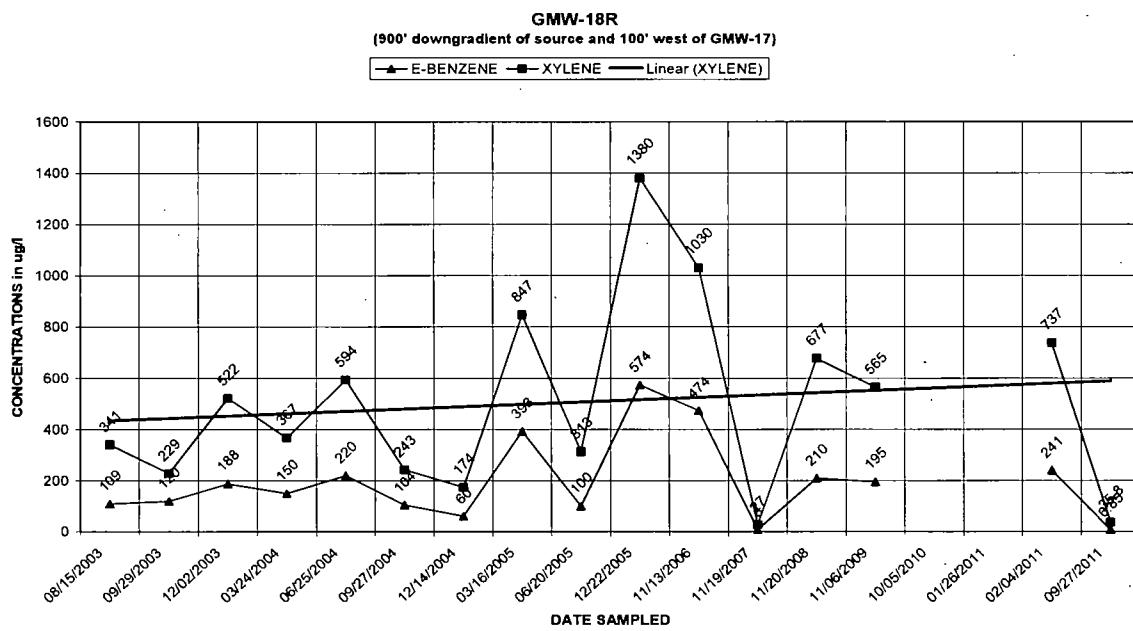
GMW-17

This well is located 100' downgradient of GMW-16. The xylene concentrations in this well averaged 735 ppb in 2005. Since that time, xylene and ethylbenzene concentrations have been low to non-detect. The xylene concentration on December 9, 2011 was 11 ppb. The following is a graph of the xylene and ethylbenzene concentrations at GMW-17 over time.



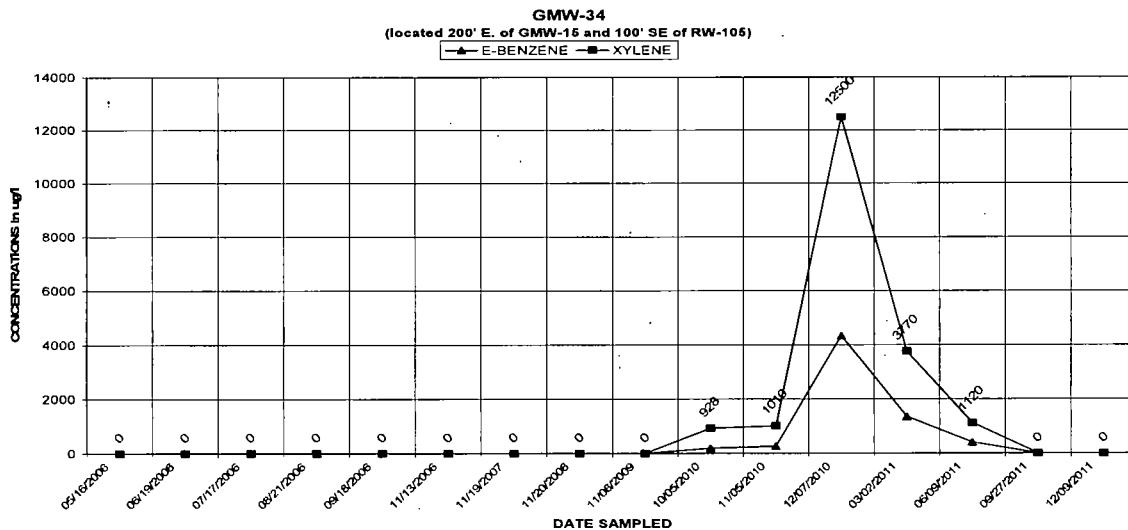
GMW-18R

This well is located 100' west of GMW-17. The concentrations are below the limits, but have trended slightly upward overall, although the trend in the past 5 years has been downward (see "GMW-18R after 12/22/05" graph below). The bentonite seal separating the upper and lower aquifers at GMW-18 apparently failed prior to the October 2010 sampling event. A replacement well, GMW-18R, was installed in January 2011. The xylene concentration on 2/04/11 was 737 ppb. The xylene concentration resulting from the September 2011 annual monitoring event was 35.8 ppb.



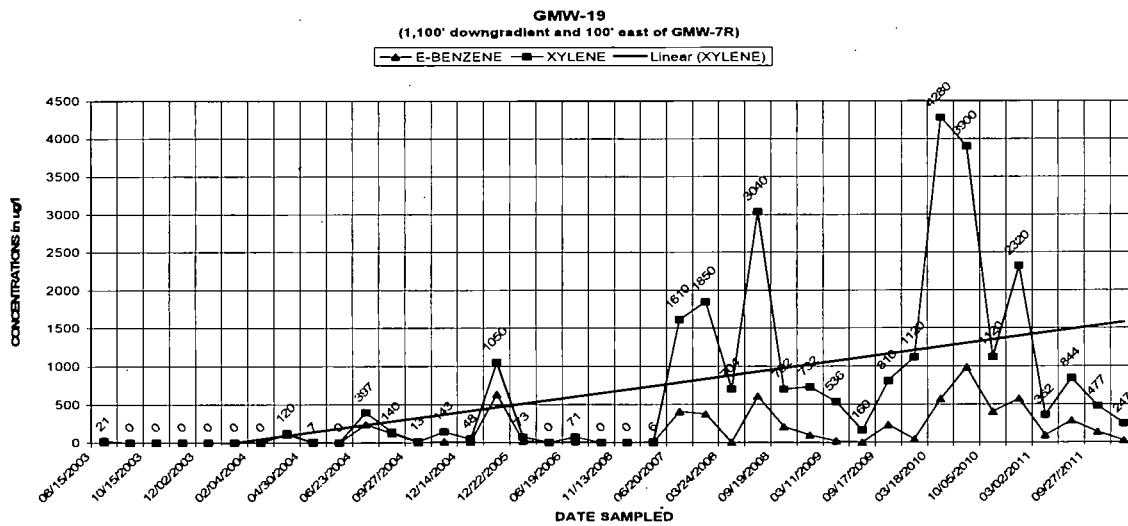
GMW-34

This well was installed in April 2006. It is located approximately 100' south and downgradient of RW-105. GMW-34 was installed to provide better definition of the eastern edge of the contaminant plume. The concentrations at GMW-34 were non-detect in the nine (9) samples taken prior to October 2010. Contamination was noted in October 2010, with concentrations apparently peaking in December 2010, then decreasing in March and June of 2011. BTEX concentrations were non-detect at GMW-34 in September and December 2011.



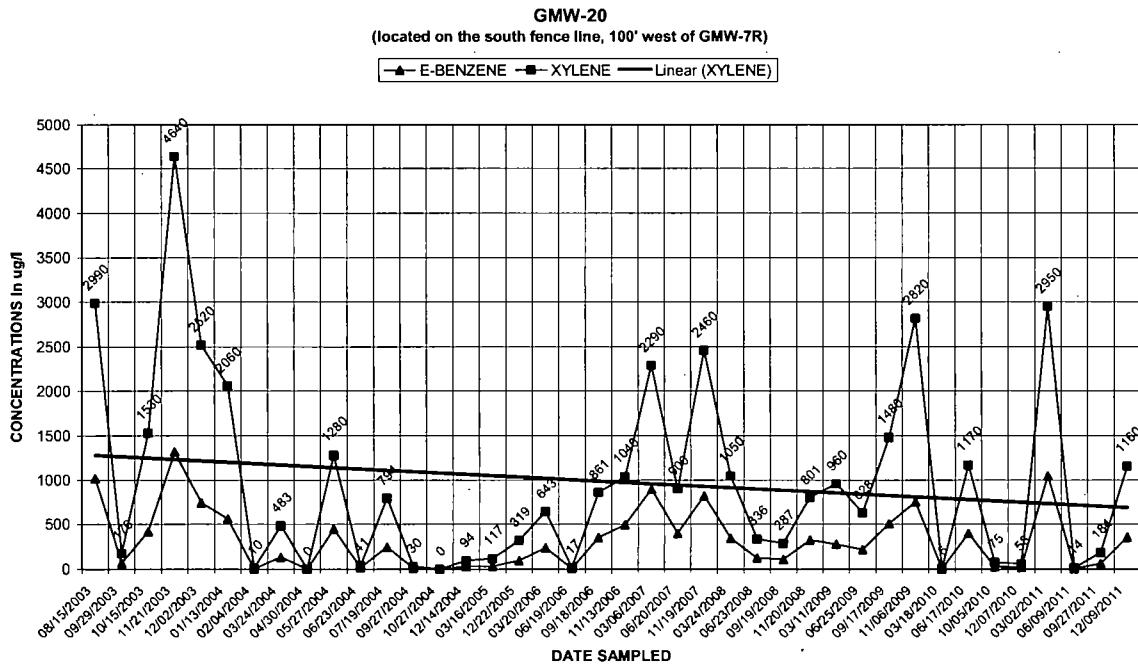
GMW-19

This well is located approximately 200' downgradient of GMW-34, on the southern boundary of the site. The overall trend in xylene concentrations at this well is upward. The highest xylene concentrations were noted in March and June of 2010. Since that time, contaminant concentrations have generally decreased. The xylene concentration in December 2011 was 247 ppb. The following graph illustrates the ethylbenzene and xylene concentrations over time for GMW-19.



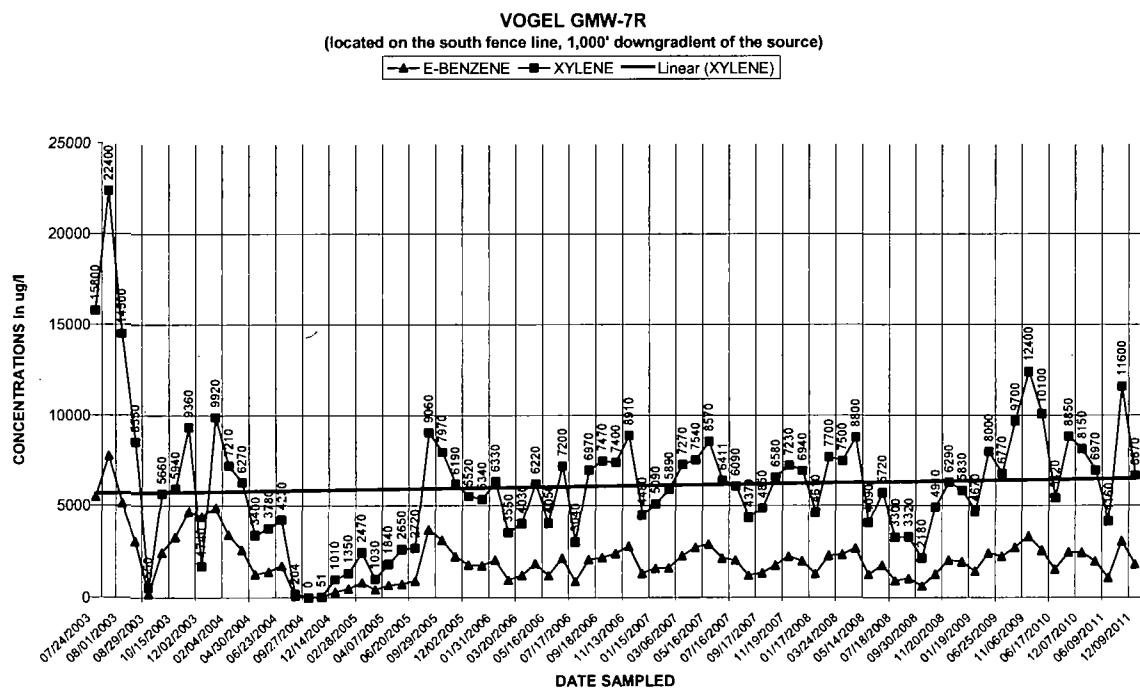
GMW-20

This well is located 100' downgradient of GMW-17 and 100' west of GMW-7R on the southern boundary of the site. The overall xylene and ethylbenzene trends are downward with both xylene and ethylbenzene concentrations remaining well below the limits. The average xylene and ethylbenzene concentrations remain well below the MCL's at 1,034 ppb (10,000 ppb MCL) and 340 ppb (700 ppb MCL), respectively. The following is a graph of the analytical data for GMW-20.



GMW-7R

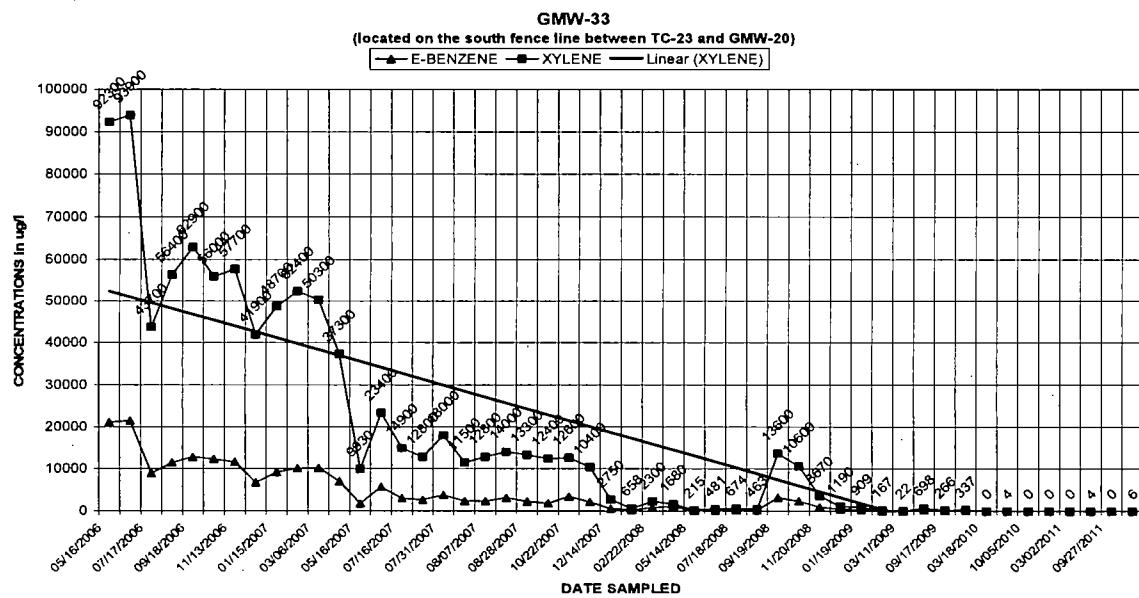
This well is located approximately 200' downgradient of GMW-34, between GMW-19 and GMW-20, on the southern boundary of the site. The concentrations in this well followed the same trends as observed in TC-6D, decreasing when the recovery wells were pumping and increasing after they were turned off in December 2004. The general concentration trend has been slightly upward. The average xylene and ethylbenzene concentrations in this well are 6,165 ppb (10,000 ppb MCL) and 2,103 ppb (700 ppb MCL), respectively. The xylene concentration in December 2011 was 6,670 ppb. The following chart shows the xylene and ethylbenzene concentrations for GMW-7R over time and the xylene trend line.



GMW-33

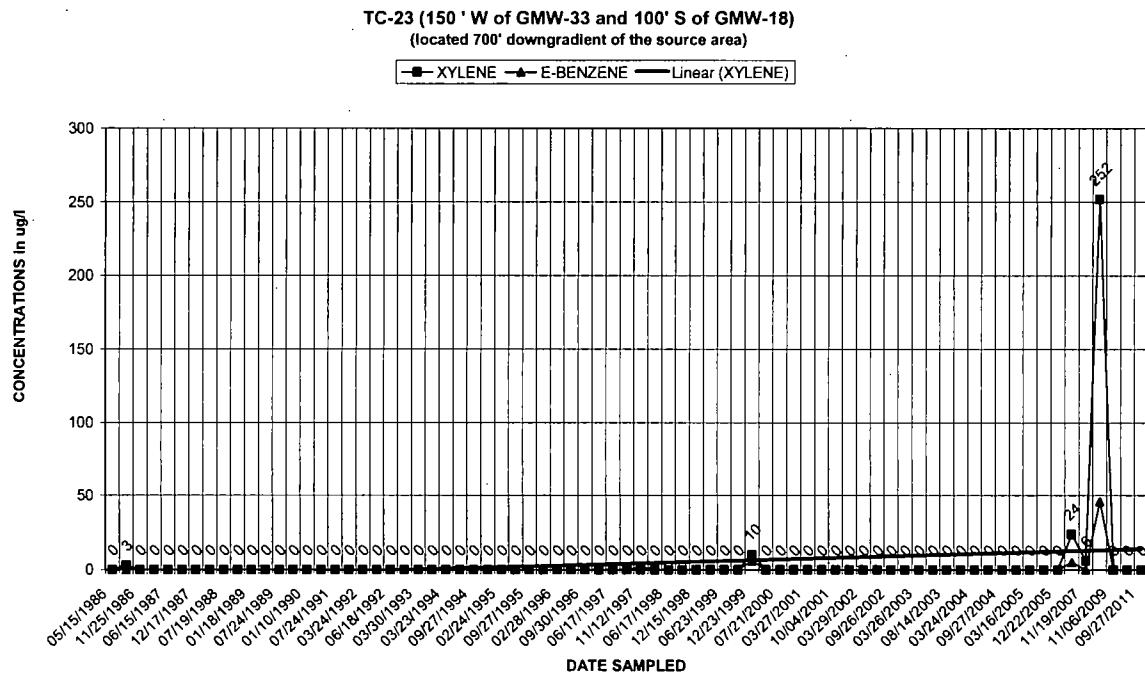
This well was installed in April 2006. It is located approximately 100' south and downgradient of GMW-17. GMW-33 was installed to monitor the groundwater concentrations between monitoring wells TC-23 and GMW-20, a distance of approximately 300'. GMW-33 was placed at this location because significant contamination had previously been detected approximately 200' further south in soil boring SB-4. There has been a significant downward trend in the concentrations at GMW-33. The average xylene concentration in this well decreased from 35,814 ppb, May 2006 thru November 2007, to 1,938 ppb after November of 2007.

On 9/19/08 the xylene concentration increased substantially to 13,600 ppb. The groundwater recovery pump in GMW-33 was damaged and had not operated from May through August 2008. The pump was replaced at the end of August 2008 and pumped through November 2008. The pumping may have caused upgradient contaminated groundwater to migrate into the well causing the higher concentrations in September and October 2008. The concentrations decreased significantly when pumping was terminated. Since March 2010, xylene and ethylbenzene concentrations at GMW-33 have been low to non-detect. The following graph shows xylene and ethylbenzene concentrations at GMW-33 since sampling began.



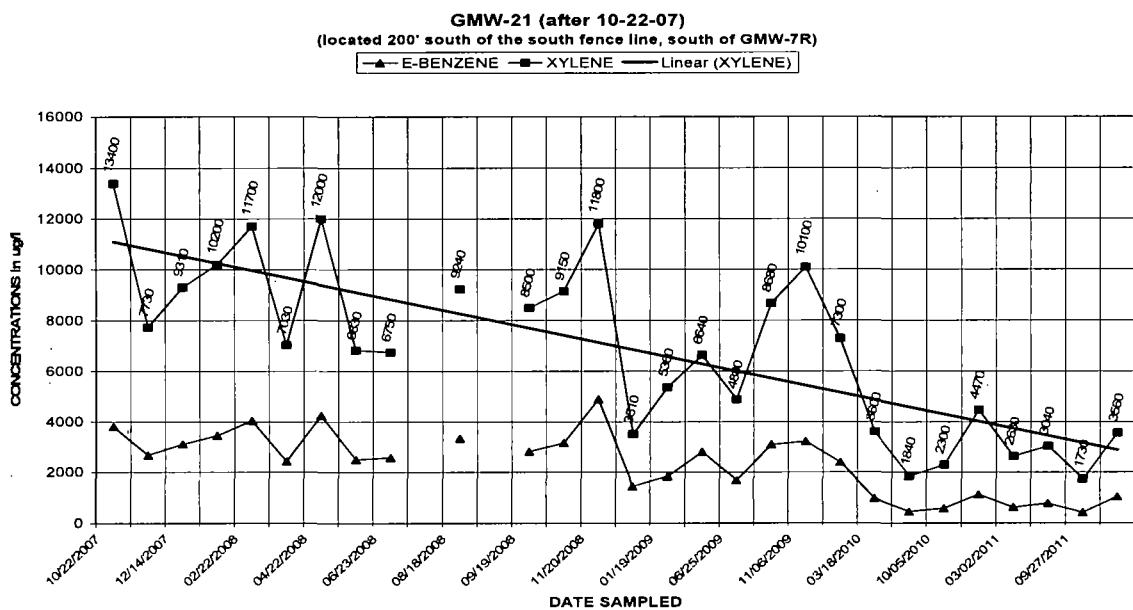
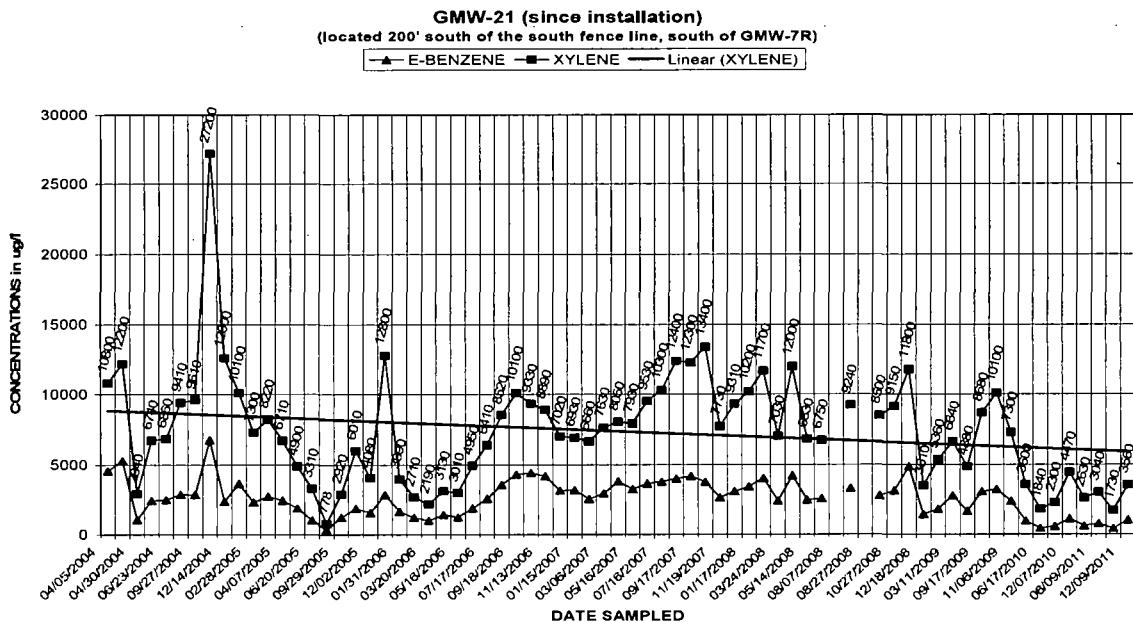
TC-23

This well was installed in 1986. It is on the west edge of the plume on the southern property line, approximately 150' west of GMW-33. The concentrations were at or near non-detect from 1986 to 2008. The xylene and ethylbenzene concentrations spiked in November 2008, although the concentrations were very low (252 ppb xylene and 46 ppb ethylbenzene) and well below MCL's. Contaminant concentrations have been non-detect the past 3 years (2009 through 2011). A graph of the xylene and ethylbenzene concentrations at TC-23 is provided below.



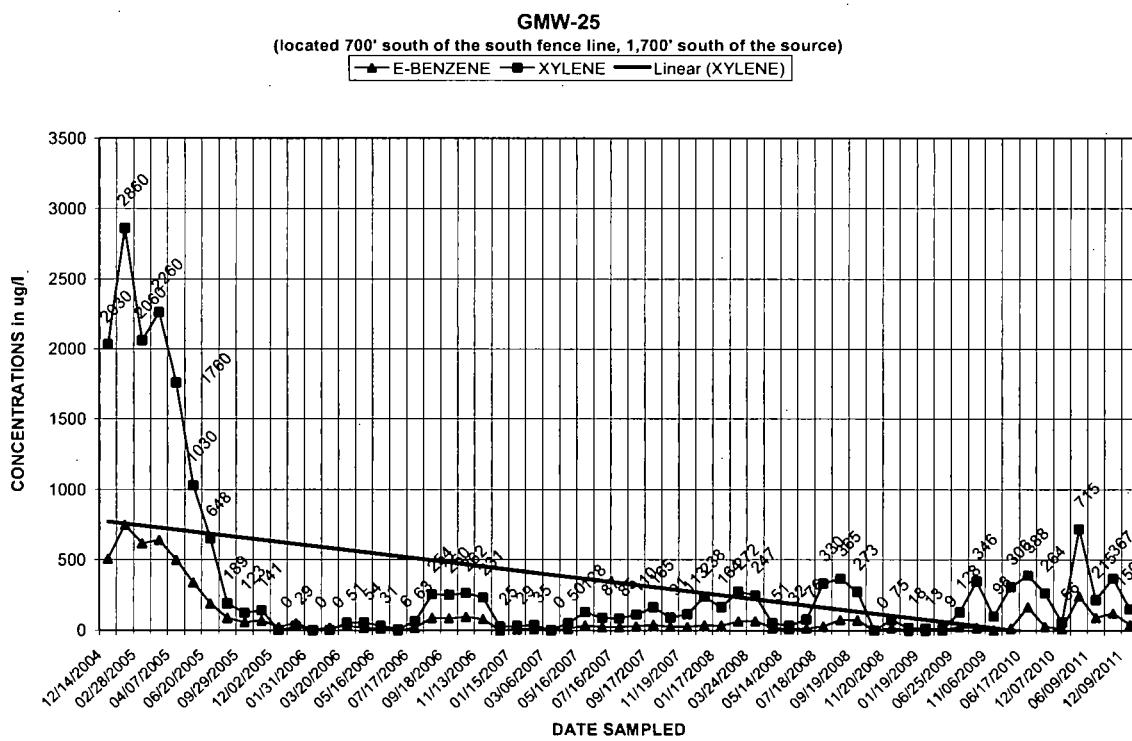
GMW-21

This well is located approximately 200' downgradient of GMW-7R. The long-term trend in xylene concentrations at GMW-21 has been downward. The average xylene and ethylbenzene concentrations in this well are 7,402 ppb (10,000 ppb MCL) and 2,618 ppb (700 ppb MCL), respectively. The xylene and ethylbenzene concentrations in December 2011 were 3,560 ppb and 1,030 ppb, respectively. Ethylbenzene and xylene were below the MCL's in September 2011. The first graph below indicates the xylene and ethylbenzene concentrations at GMW-21 since its installation. The second graph illustrates these concentrations at GMW-21 since October 2007. A more significant downward trend is apparent in the second graph.



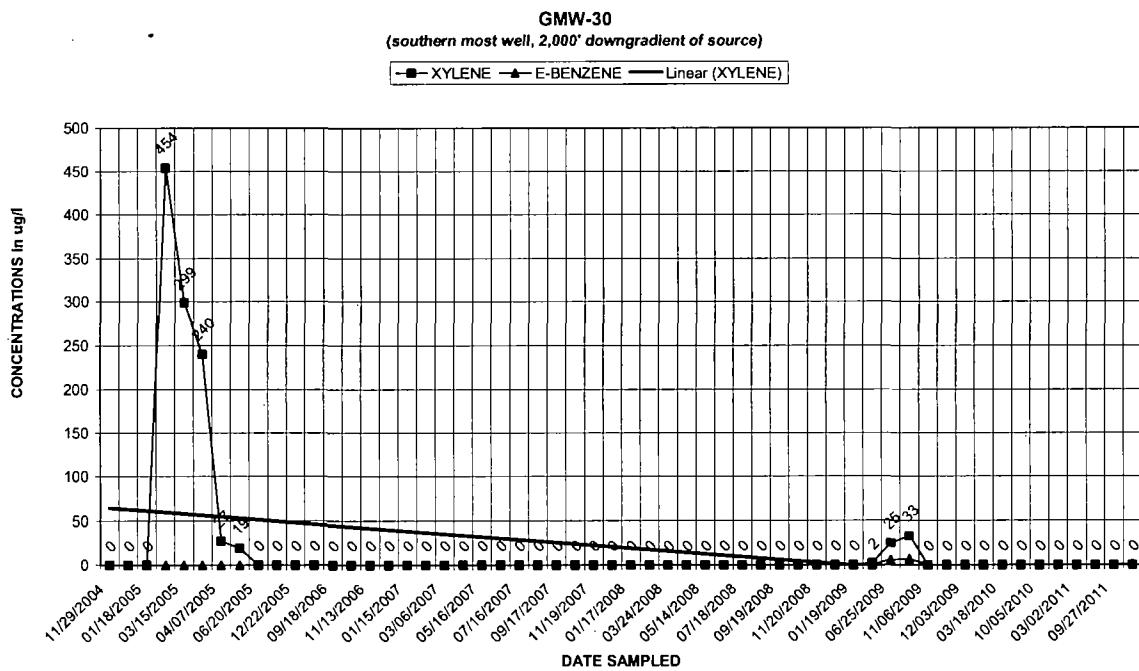
GMW-25

This well is the southernmost well with contamination. It is located approximately 1,700' downgradient of the disposal area and 700' south of GMW-7R (south property line). The concentrations at this location remain well below the limits. The xylene concentration was 150 ppb on 12/09/11. The following is a graph of the xylene and ethylbenzene concentrations at GMW-25.



GMW-30

This well is located approximately 2,000' downgradient of the source and 200' southeast and downgradient of GMW-25. It is the furthest downgradient well. Low concentrations of xylene were detected in this well from February through May 2005 (see following graph). The xylene concentrations in forty-five (45) of the forty-eight (48) samples collected since May 2005 were non-detect. The xylene concentration were non-detect for each of the 2011 quarterly monitoring events.



Perimeter Wells (GMW-3, 6, 8, 30, 34, TC-7, TC-22, TC-23, MW-1 & MW-5)

Of the perimeter wells noted above, GMW-30, GMW-34 and TC-23 were discussed previously. The following perimeter wells were sampled in 2011 and had non-detect BTEX concentrations, comparable to historical sampling results: GMW-3, GMW-8, TC-22, MW-1 and MW-5. The remaining two perimeter wells sampled in 2011, GMW-6 and TC-7, are discussed below.

Due to contaminant detections noted at GMW-34 in October and December 2010, quarterly sampling of GMW-6 was completed in 2011. The 2011 analytical results for GMW-6 were non-detect BTEX concentrations for each quarterly event. BTEX concentrations at GMW-34 were also non-detect in September and December 2011. It is recommended that quarterly sampling of GMW-6 be discontinued and that GMW-34 be sampled as the perimeter well in this eastern area. If detections are noted again at GMW-34, sampling of GMW-6 could be resumed.

Sampling of TC-7 was completed during the annual monitoring event in September 2011. Detections of BTEX were noted at TC-7, based on the analytical results. The BTEX concentrations are very low, however the September 2011 sampling event was the first for which detectable concentrations were noted at TC-7. It is recommended that TC-7 be sampled during the March 2012 monitoring event to further evaluate conditions at this location.

Private Wells

Two private dug wells, identified as the Bos and Niess wells, are sampled as part of the annual monitoring schedule. The Bos well is located approximately 600' southwest of MW-1 and the Niess well is located approximately 500' northwest of MW-1. Both wells are upgradient of the site. These wells have remained clean since the initial sampling in 1992. Similar to historical results, the September 2011 sampling of these wells resulted in non-detect BTEX concentrations. Neither of these wells is used for human consumption; the farm residences where these wells are located are on rural water.

Heavy Metals Sampling (GMW-7R, 15, 9R, & TC-6D)

The Third Superfund Five-Year Review completed in 2009 contained several recommendations. Recommendation #4 stated the following: "Determine if the phytoremediation irrigation activities are mobilizing metals from the area where the treated soils were placed." Prior to this recommendation, groundwater samples from GMW-9R and TC-6D were being analyzed for metals. Wells GMW-7R and GMW-15 were added to the metals monitoring plan to comply with the recommendation.

On 9/27/11, field filtered water samples were taken from GMW-7R, GMW-9R, GMW-15 and TC-6D and were analyzed for the following heavy metals: arsenic, cadmium, chromium, lead, and mercury. Table 2 contains a summary of the groundwater heavy metal analyses. The laboratory analytical data from the September 2011 monitoring event was provided in GeoTek's October 27, 2011 report. Arsenic was noted to be present in each of the sampled wells, however, the 2011 concentrations were less than results from previous sampling. Cadmium, chromium, lead and mercury were non-detect in all sampled wells. The results from the sampled wells indicate that heavy metals have not migrated downgradient from the heavy metals disposal area into these wells.

Recovery Wells RW-102 & RW-104

Vogel's ceased operation of the groundwater recovery system and the air stripper tower in 2004 in order to evaluate the migration of the contamination plume under natural groundwater conditions. The groundwater recovery system using the air stripper tower has not operated during the past 7 years. However, recovery wells RW-102 and 104 were pumped in 2007 through 2009 to irrigate the phytoremediation trees from approximately June 1 through November 15 of each year.

The average benzene, toluene, ethylbenzene and xylene (BTEX) concentration detected in RW-102 and RW-104 in 2009 was 38 ppm and 48 ppm, respectively. The recovery wells were not pumped in 2010 or 2011.

4. Free Product Recovery Status

In September 2005 a Xitech® free product recovery system was installed in monitoring well MW-4R. The system is intended to operate continuously, removing free product that collects on the surface of the groundwater. The recovery rate in MW-4R has been negligible, indicating that a limited amount of recoverable product or that the water table is at depths that limit product removal. Very little free product had been recovered from this well since December 2005. The greatest thickness of product observed in 2011 was 2.40' on October 6. The product thickness on December 9, 2011 was 0.79'. The following table summarizes the approximate volumes of free product removed since recovery began in 1992.

Method of Removal	Phase of Product Removal	Gallons
Soil Remediation 1992 – 1998	Sludge and solvents removed	5,500
Soil Remediation 1992 – 1998	Soil remediation	71,000
Free Product Plume Excavation 2000	Repositioned soils volatization	31,000
Water Treatment Plant	Aqueous phase product	13,000
Water Treatment Plant	Free product	15,800
Xitech® recovered free product	Free Product 2005/2006	15
Phytoremediation Irrigation Water	Aqueous phase product 2007	40
Phytoremediation Irrigation Water	Aqueous phase product 2008	87
Xitech® recovered free product	Free Product 2008	11
Phytoremediation Irrigation Water	Aqueous phase product 2009	68
Xitech® recovered free product	Free Product 2010	3
Xitech® recovered free product	Free Product 2011	4
	Total	136,517

5. Creek Sampling

The Third Superfund Five-Year Review completed in 2009 contained several recommendations. Recommendation #3 stated, "Determine if groundwater conditions are adversely impacting the intermittent stream that flows through the northern portion of the site". To comply with this recommendation surface water samples were taken from the stream at three (3) locations: up gradient of the site approximately 50', just west of the gravel road; on-site near monitoring well TC-7; and downgradient approximately ¼ mile at the bridge under 490th Street. The water samples were collected on September 27, 2011 and submitted for laboratory analysis of the heavy metals detected on site (arsenic, cadmium, chromium, mercury and lead). The water samples were field filtered prior to placing them in the sample containers.

Table 3 provides a summary of the creek sample results. The laboratory report was provided with GeoTek's October 27, 2011 report. A review of the data indicates that arsenic was noted at each sampling location. The arsenic concentrations detected in the September 2011 samples are well below the Iowa Surface Water Quality Standards (ISWQS) and are less than the arsenic concentrations detected in February 2011 samples. Since arsenic was detected at all 3 sample locations, it does not appear the source of the arsenic is the groundwater at the project site.

6. Evaluation of Short-term Pumping & Treatment by Irrigation with Potential Long term Phytoremediation

In mid-May 2007 phytoremediation trees were planted and an irrigation system was placed in operation at the end of July 2007. The 2007 phytoremediation system consists of 1-acre of trees planted 8' apart in 23 rows alternately spaced 8' and 10' apart. Five hundred (500) poplar trees [Imperial Carolina poplar (*Populus X canadensis Moench*)] (12" to 18" seedlings) and 250 willow trees [*Salix Lutea Nutt.*] (12" to 20" seedlings) were planted. An irrigation system consisting of 30 sprinkler heads [5 gallons per minute (gpm) head capacity] was installed to irrigate the trees. The irrigation water was pumped from monitoring well GMW-33 and recovery well (RW) RW-104 (for more information on the phytoremediation system see the January 2010 "Summary Report on Expansion of Short-term Pumping and Treatment by Irrigation with Potential Long-term Phytoremediation"). In May 2008, an additional 1,800 trees were planted on 2.5 acres north of the 2007 planting.

Well Pumping and Irrigation Rates

Recovery wells RW-103 and RW-104 were not pumped during 2011. Passive remediation, phytoremediation and monitored natural attenuation (MNA) have been occurring since the end of the irrigation season in November 2009.

Remediation Monitoring

Monitoring of this remediation method included: 1) the volume and concentrations of the water pumped from GMW-33, RW-104 and RW-102; 2) groundwater sampling below the phytoremediation system; 3) air emissions during irrigation; 4) precipitation monitoring; 5) continuation of the current groundwater monitoring program; 6) monitored natural attenuation (MNA) and 7) groundwater sampling at the former SB-4 borehole location when documenting success of remediation.

Since the recovery wells were not pumped in 2011, the irrigation monitoring listed under items 1, 2, 3, and 7 in the above paragraph were not conducted in 2011.

Precipitation Monitoring

Excessive amounts of precipitation could result in saturated soil conditions and runoff. Runoff from the phytoremediation system does not leave the site. The site is graded so runoff will flow north and remain on site above existing contaminated areas. Under extreme flooding conditions, the runoff would flow into a holding pond and not leave the site. It is highly unlikely that runoff from the phytoremediation site will reach the north holding pond located approximately 1,000' downgradient. Since there was no irrigation in 2011, monitoring of runoff from the site was not completed.

The following is a summary of the approximate precipitation received during 2011 based on measurements made in Sioux County, Iowa.

Month	Precipitation in inches
Apr	2.26
May	4.23
June	5.69
July	1.91
Aug	0.66
Sept	0.86
Oct	0.29
Nov	0.06
Total	15.96

The amount of precipitation that the site received was monitored closely and compared to historical averages. If the precipitation exceeded the average rainfall for the site, the site was inspected to determine if saturated soil conditions were occurring. From April through November, the site received approximately 11" less rain in 2011 than in 2010.

Phytoremediation Tree Survival Rate

Five hundred poplar trees [Imperial Carolina poplar (*Populus X canadensis Moench*)] (12" to 18" seedlings) and 250 willow trees [*Salix Lutea Nutt.*] (12" seedlings) were planted in 2007 on the RW-104 system irrigated area. The willow trees, which are more moisture tolerant, were planted on the southern third of the site where water routinely ponds at the surface. In 2008 an additional 1,800 Imperial Carolina poplars were planted on the area initially irrigated by RW-102.

The survival rate for the entire site (2,500 trees) was approximately 97% at the end of the 2008 growing season. The survival rate in 2009 dropped to approximately 94% during the winter from damage caused by deer, rabbits, mice and voles. Dead trees were replaced in April 2010. Very few trees were lost in 2011.

Phytoremediation Tree Growth Rate

According to the US Soil Conservation Service, the average annual growth rate for the poplar tree Imperial Carolina is 1.2 meters (3.9') under normal growing conditions and average soil conditions. The average annual growth rate of the poplar trees planted in 2007 was approximately 4' per year; with the tallest trees achieving heights of 12' in October 2009. The average diameter, at approximately 5' above ground, of the trees planted in 2007 was approximately 1.5" in October 2009. The average annual growth rate of the poplar trees planted in 2008 was also approximately 4'; with the tallest trees achieving heights of 8' in October 2009. The average diameter, at approximately 5' above ground, of the trees planted in 2008 was approximately 1" in October 2009. The 2007 and 2008 trees were noted to be nearly the same size in 2010.

The average diameter in November 2011, at approximately 5' above ground, of all of the trees was approximately 4.5". The average annual growth rate of the poplar trees is approximately 3 - 4' per year; with an average tree height of approximately 18 - 20' at the end of the 2011 growing season. In general, the trees are healthy and appear to be growing well. The trees are mature enough that additional irrigation is not anticipated to be necessary.

The phytoremediation system trees will "pump" a substantial amount of groundwater upon their maturity. The phytoremediation trees are expected to uptake groundwater only from the shallow aquifer. The shallow and deep aquifers merge into one aquifer in the northern portion of the site. Natural groundwater flow is to the north in the shallow aquifer to the areas where the upper and lower aquifers merge near monitoring well GMW-13. At this point the shallow aquifer terminates into the deep aquifer which flows to the south/southeast.

The migration of contaminants in the deep aquifer to the south is where the off-site contamination has occurred. Once the trees are established in 2012 to 2013, the mature trees will pump at a rate of 25 to 50 gallons per day per tree. The total daily pump rate would be approximately 62,500 gpd to 125,000 gpd. (2,500 trees x 25 gpd = 62,500 gpd and 2,500 trees x 50 gpd = 125,000 gpd). This would be a seasonal effect; 6 months per year, during the major recharge period. This withdrawal rate is comparable to the combined recovery rate (0.121 million gallons per day) of recovery wells RW-102 and RW-103 when they were pumping. The recovery wells operated seasonally and their pumping influenced the off-site groundwater gradient. The average removal of 60,000 to 125,000 gpd (11 million to 22 million gallons per year) from the shallow aquifer will reduce recharge of the deep aquifer, in turn decreasing off-site migration. The expectation is that the water withdrawal from the shallow aquifer by the trees will reduce the recharge of the deep aquifer. This withdrawal could allow natural attenuation to sufficiently reduce off-site contaminants and possibly withdraw water from the deep aquifer through the trees in the shallow aquifer. This remains to be seen and will be the focus of subsequent assessments when the trees have matured in a few years.

Tree Tissue Analyses

The 2009 EPA five-year review concludes that the remedy at Vogel site is protective of human health and the environment in the short-term because there is no evidence of current exposure. However, in order for the remedy to be protective in the long-term, several actions were recommended. One action was to evaluate risks associated with the potential uptake and accumulation of contaminants in phytoremediation trees planted over the area where treated soils were placed. It is proposed that tree tissue sampling be conducted prior to the next EPA Five Year Review in 2014. However, should Vogel's decide to remove tree material from the property prior to the 5-year review, then tree tissue analysis will be conducted, prior to any removal.

The following is the proposed tree sampling method should tree tissue analyses be required. Samples will not be taken until the trees reach a minimum diameter of 5 inches. Core samples will be collected with an increment borer from 1% of the trees (approximately 25 trees), randomly selected across the site. Each core sample will be collected from a height of approximately 1.5 m above ground. Five composite samples, made up of core samples from 5 trees, will be submitted for analysis. After the bark is removed from the core, the next 6 centimeters (cm) of core will be placed in a 40-milliliter (ml) headspace vial and will be sealed with a Teflon-faced butyl cap. Prior to analysis, samples will be held at room temperature for at least 24 hours to permit benzene and other volatile organic compounds to diffuse into the headspace of the vial. One-cubic-centimeter gas samples from the headspace will be analyzed for BTEX on a gas chromatograph using either an electron-capture or a flame-ionization detector. Core samples will also be collected from trees planted over the area where lead-contaminated soils were placed. These tree samples will be analyzed for arsenic, cadmium, chromium, mercury and lead.

Monitored Natural Attenuation Evaluation

The 2008 Phytoremediation Evaluation Report contained a proposal to used monitored natural attenuation (MNA) as a possible remediation method for the off site contamination. Based on EPA's guidance, MNA would likely be an acceptable remediation strategy for the off-site contamination because: 1) There is significant scientific research that indicates the VOC contaminants at this site can be effectively addressed by natural attenuation processes; 2) the plume is stable and not likely to migrate; 3) the potential for unacceptable risks to human health or environmental resources by the contamination is low; and 4) There is significant evidence that the contamination plume is no longer increasing in extent and is likely shrinking. There are primary and secondary lines of evidence that can be used to documented that MNA is occurring.

Primary Lines of Evidence that Natural Attenuation is Occurring

The primary line of evidence for natural attenuation is to document decreasing trends in contaminant concentrations. The following is a discussion of concentration trends observed in the southern property line monitoring wells and the downgradient offsite monitoring wells.

GMW-7R is located on the south property line. The contaminant concentration trend in this well has been stable to slightly upward. The average xylene and ethylbenzene concentrations in this well are 6,165 ppb (10,000 ppb limit) and 2,103 ppb (700 ppb limit), respectively. (See graph of GMW-7R in Section 3 above)

GMW-19 is located approximately 100' east of GMW-7R, on the southern boundary of the site. Increased contaminant concentrations were noted at GMW-19 in March and June of 2010, with concentrations steadily decreasing since that time. The average xylene and ethylbenzene concentrations in this well remain low at 1034 ppb (10,000 ppb limit) and 340 ppb (700 ppb limit), respectively. The xylene concentration at GMW-19 was 247 ppb in December 2011. (See graph of GMW-19 in Section 3 above)

GMW-20 is located 100' west of GMW-7R on the south property line. The overall xylene and ethylbenzene trends are downward with both xylene and ethylbenzene concentrations remaining well below the limits. The average xylene and ethylbenzene concentrations remain below the limits at 1,034 ppb (10,000 ppb limit) and 340 ppb (700 ppb limit), respectively. (See graph of GMW-20 in Section 3 above)

GMW-33 was installed in April 2006 on the south property line. It was installed to monitor the groundwater concentrations between monitoring wells TC-23 and GMW-20, a distance of approximately 300'. GMW-33 was placed at this location because significant contamination had previously been detected approximately 200' further south in soil boring SB-4. There has been a significant downward trend in the concentrations in this well. The average xylene concentration in this well decreased from 51,916 ppb, May 2006 thru June 2007, to 5,600 ppb after June of 2007. The average xylene concentration for 2009 through 2011 is 268 ppb. On 12/09/11, the xylene concentration was 5.76 ppb (10,000 ppb limit) and the ethylbenzene was 1.09 ppb (700 ppb limit). (See graph of GMW-33 in Section 3 above)

GMW-21 is located approximately 200' downgradient of GMW-7R and the south property line. The contamination trend in this well since October 2007 has been downward. (See graph of GMW-21 in Section 3 above)

GMW-25 is the southernmost well with contamination. It is located approximately 1,700' downgradient of the disposal area and 700' south of GMW-7R (south property line). The concentrations at this location remain well below the limits. The concentrations have trended downward significantly from a xylene concentration of 3,680 ppb on 11/23/04 to <2 ppb in December 2005. The xylene concentration was 150 ppb on 12/09/11. (See graph of GMW-25 in Section 3 above)

GMW-30 is located approximately 2,000' downgradient of the source and 900' south of GMW-7R (south property line). It is the furthest downgradient well. Low concentrations of xylene were detected in this well from February through May 2005. The xylene concentrations in forty-five (45) of the forty-eight (48) samples collected since May 2005 were non-detect. The xylene concentration was non-detect for all 2011 quarterly monitoring events. (See graph of GMW-30 in Section 3 above)

Secondary Lines of Evidence that Natural Attenuation is Occurring

Secondary lines of evidence that MNA is occurring can be obtained by monitoring of geochemical indicators of natural biodegradation processes. Monitoring was conducted during three events in 2009 and three events in 2010 to document that MNA was occurring at the site. This monitoring included samples from: up-gradient or side-gradient wells outside the plume (MW-1 and MW-5); wells within the plume (GMW-7R, GMW-9R, GMW-21 & GMW-25); and a downgradient "sentinel" well (clean) located outside but directly downgradient of the plume, that is capable of detecting further migration of the contamination (GMW-30). The 2011 MNA monitoring event was completed on June 2, 2011.

The geochemical indicators used to measure the natural attenuation of petroleum compounds in groundwater monitoring wells included: dissolved oxygen (DO), pH, eH redox (oxidation reduction potential {ORP}), nitrate (NO₃), sulfate (SO₄), and soluble (ferrous) iron (Fe II). Field analysis for these parameters was conducted during each sampling event.

The following field analysis methods were conducted during each sampling event: YSI 556 Multi-Parameter Probe for pH, DO, redox, and specific conductivity and a Hach DR/2010 spectrophotometer for nitrates, sulfates, iron, and manganese. MNA data is summarized in the following tables, with a separate table provided for each monitoring event.

MNA analytical results for 6/26/09

Well	BTEX mg/l	pH	Redox EV	DO mg/l	Nitrate mg/l	Sulfate mg/l	Fe (II) mg/l	Methane ug/l
Wells within the plume								
GMW-7R	9,034	7.30	-192	1.06	0.0	47	2.23	82
GMW-9R	22,686	7.14	-167	1.31	0.0	14	3.17	146
GMW-13	93,786	7.03	-83	1.09	0.0	0.0	3.14	347
GMW-21	6,563	7.12	-200	1.81	0.0	56	3.10	<26
GMW-25	161	6.78	83.7	10.98	0.9	+700	0.08	<26
Sentinel Well (farthest downgradient well)								
GMW-30	31	6.92	138	9.13	1.9	27	1.64	<26
No detectable Hydrocarbons (up gradient and side gradient wells)								
MW-1	ND	7.19	-49.5	7.50	0.0	+700	0.0	<26
MW-5	ND	7.05	-12.7	7.75	0.4	43	0.03	<26

ND = non-detected; na = not analyzed

MNA analytical results for 9/17/09

Well	BTEX mg/l	pH	Redox EV	DO mg/l	Nitrate mg/l	Sulfate mg/l	Fe (II) mg/l	Methane ug/l
Wells within the plume								
GMW-7R	12,455	7.07	-178	1.01	2.1	57	1.44	na
GMW-9R	59,966	7.01	-152	1.11	1.4	28	3.08	na
GMW-13	117,528	6.91	-98.5	0.81	5.6	0.0	+3.0	na
GMW-21	11,788	6.99	-186.5	1.33	11.7	61	+3.0	na
GMW-25	367	6.72	62.9	8.74	14.6	49	2.4	na
Sentinel Well (farthest downgradient well)								
GMW-30	42	6.57	95.2	9.07	0.0	23	0.23	na
No detectable Hydrocarbons (up gradient and side gradient wells)								
MW-1	ND	7.02	-45.8	10.1	1.1	+700	0.0	na
MW-5	ND	6.97	-27.1	9.13	0.8	49	0.0	na

MNA analytical results for 11/06/09

Well	BTEX mg/l	pH	Redox EV	DO mg/l	Nitrate mg/l	Sulfate mg/l	Fe (II) mg/l	Methane ug/l
Wells within the plume								
GMW-7R	15,759	6.84	-164.5	1.84	1.2	64	0.64	na
GMW-9R	59,810	6.81	-136.9	1.15	0.0	35	+3.0	na
GMW-13	140,730	6.79	-114.0	1.04	4.4	0.0	+3.0	na
GMW-21	13,334	6.87	-173.0	1.92	10.3	+70	+3.0	na
GMW-25	106	6.66	42.0	9.00	15.5	36	+3.0	na
Sentinel Well (farthest downgradient well)								
GMW-30	ND	6.25	52.3	8.40	0.0	15	0.52	na
No detectable Hydrocarbons (up gradient and side gradient wells)								
MW-1	ND	6.85	-42.0	8.76	1.9	+700	0.06	na
MW-5	ND	6.89	-27.0	8.80	0.5	35	0.0	na

ND = non-detected; na = not analyzed

MNA analytical results for 5/10/10

Well	BTEX mg/l	pH	Redox EV	DO mg/l	Nitrate mg/l	Sulfate mg/l	Fe (II) mg/l	Methane ug/l
Wells within the plume								
GMW-7R	6,960	7.64	2.20	1.58	<1.0	94	2.12	na
GMW-9R	55,020	7.42	-11.1	1.89	<1.0	9	9.15	na
GMW-13	140,230	7.30	7.48	1.72	0.3	0.0	8.40	na
GMW-21	2,283	7.66	8.1	1.75	<1.0	+700	0.98	na
GMW-25	552	8.05	30.5	9.05	<1.0	68	1.02	na
Sentinel Well (farthest downgradient well)								
GMW-30	ND	7.78	35.7	3.13	3.6	53	0.17	na
No detectable Hydrocarbons (up gradient and side gradient wells)								
MW-1	ND	7.62	22.2	6.0	0.3	350	0.26	na
MW-5	ND	7.74	22.4	7.07	0.9	112	0.17	na

MNA analytical results for 6/24/10

Well	BTEX mg/l	pH	Redox EV	DO mg/l	Nitrate mg/l	Sulfate mg/l	Fe (II) mg/l	Methane ug/l
Wells within the plume								
GMW-7R	6,960	6.73	80.3	1.78	1.6	29	0.26	na
GMW-9R	55,020	7.07	45.0	1.93	4.7	40	3.11	na
GMW-13	140,230	6.82	63.7	2.25	3.0	7	7.38	na
GMW-21	2,283	7.14	69.3	4.9	4.9	+700	2.12	na
GMW-25	552	7.19	83	8.58	4.0	+700	0.97	na
Sentinel Well (farthest downgradient well)								
GMW-30	ND	7.16	101.8	7.77	4.8	157	0.00	na
No detectable Hydrocarbons (up gradient and side gradient wells)								
MW-1	ND	6.3	74.9	8.8	5.2	706	0.07	na
MW-5	ND	7.02	98.9	9.82	2.0	71	0.00	na

MNA analytical results for 10/20/10

Well	BTEX mg/l	pH	Redox EV	DO mg/l	Nitrate mg/l	Sulfate mg/l	Fe (II) mg/l	Methane ug/l
Wells within the plume								
GMW-7R	11,350	8.0	-26.9	2.10	0.80	24	0.44	na
GMW-9R	44,250	7.40	-19.8	1.94	0.0	32	6.24	na
GMW-13	145,300	7.30	-18.1	1.58	3.2	0.0	6.25	na
GMW-21	2,878	7.0	26.4	2.12	2.9	.670	0.37	na
GMW-25	291	6.9	29.5	7.52	0.0	440	0.37	na
Sentinel Well (farthest downgradient well)								
GMW-30	ND	7.3	27.3	9.1	0.0	35	0.28	na
No detectable Hydrocarbons (up gradient and side gradient wells)								
MW-1	ND	7.5	0.60	4.81	2.3	730	0.0	na
MW-5	ND	7.3	8.2	7.39	1.1	51	0.06	na

MNA analytical results for 6/02/11

Well	BTEX mg/l	pH	Redox EV	DO mg/l	Nitrate mg/l	Sulfate mg/l	Fe (II) mg/l	Methane ug/l
Wells within the plume								
GMW-7R	5,290	7.61	50.1	6.29	0	18	1.14	na
GMW-9R	44,140	7.77	59.0	14.09	3.4	19	8.3	na
GMW-13	99,780	7.48	10.5	6.51	0	1	4.6	na
GMW-21	3,860	7.25	43.6	10.65	0	67	2.11	na
GMW-25	307	7.28	38.8	14.60	0	140	0.37	na
Sentinel Well (farthest downgradient well)								
GMW-30	ND	7.45	50.0	11.58	0	26	0.46	na
No detectable Hydrocarbons (up gradient and side gradient wells)								
MW-1	ND	7.75	39.9	17.25	0.6	700	0.05	na
MW-5	ND	7.51	56.6	16.63	0.4	700	0.08	na

ND = non-detected; na = not analyzed

The 2011 MNA results generally indicate that natural biodegradation continues to take place. Several of the monitored geochemical parameters demonstrated the occurrence of natural biodegradation.

The pH values measured for the 2011 MNA monitoring event varied little from well to well. The pH levels are in the neutral range, therefore they do not adversely impact natural biodegradation.

The Redox (ORP) results for 2011 appear inconclusive relating to biodegradation. Previous MNA monitoring events in 2009 and 2010 generally indicated much lower levels in the most contaminated wells versus that detected in the less contaminated wells. Theoretically, aerobic degradation activity occurs at a highly positive redox potential, while anaerobic microbial processes such as nitrate and sulfate reduction will occur at strongly negative redox potentials.

The DO results for 2011 were much higher than those noted for 2009 and 2010. It appears the DO probe for the YSI meter was not operating correctly in 2011. Considering the 2011 DO data in relative terms, higher DO concentrations were generally measured in the less contaminated wells than in the more contaminated wells.

With the exception of GMW-9R, MW-1 and MW-5, nitrate was not detected in the monitoring wells. Lower sulfate concentrations were noted in the more contaminated wells as compared to the less contaminated wells. Decreased nitrate and sulfate concentrations in the anaerobic (higher contaminated) portion of the plume indicates use of nitrate and sulfate as electron acceptors for anaerobic biodegradation of petroleum hydrocarbons. The average sulfate concentration in the contaminated wells (GMW-7R, 9R, 13, and 21) was 26.2 mg/l and the average sulfate concentration in the cleaner wells (GMW-25, 30, and MW-1 and 5) was 392 mg/l.

Comparable to 2009 and 2010 results, the iron, Fe II, concentrations for 2011 demonstrated the most consistent evidence that biodegradation was occurring. The average iron concentration in the contaminated wells (GMW-7R, 9R, 13, and 21) was 4.04 mg/l and the average detected in the cleaner wells (GMW-25, 30, and MW-1 and 5) was 0.24 mg/l. Higher concentrations of iron Fe (II) indicate that iron Fe (III) is being used as an electron acceptor during anaerobic biodegradation of petroleum hydrocarbons.

7. Conclusions

The contaminant plumes in Figures 4, 5, 6 and 7 generally indicate concentrations decrease significantly downgradient of monitoring well TC-6.

In general, the concentrations remain steady or declining in the monitoring wells (GMW-7R, 19, 20 and TC-23) located on the southern property line. The concentrations in GMW-33 (also located on the southern property line) have decreased significantly and have been at or near non-detect over the past two years. Presently only the ethylbenzene concentrations in GMW-7R exceed the limit.

The contamination concentration trend is downward or stable in the off-site monitoring wells south of the south property line (GMW-21, 25 and 30). The xylene concentration at GMW-21 has remained below the 10,000 ppb MCL since November 2009. The ethylbenzene concentration at GMW-21 was above the 700 ppb MCL for 2 (June and December) of the 2011 quarterly monitoring events. The xylene ethylbenzene concentrations in GMW-21 have trended downward since October 2007. The contaminant concentrations at GMW-25 continue to be encouraging; they have remained well below the limits for over 6.5 years and indicate the downgradient edge of the plume is generally stable.

The recovery wells and water treatment plant (WTP) have been off line for 7 years and this appears to have had a modestly negative impact on the contamination levels within the source of the plume (GMW-7R, 9R, 13 through 20 and TC-6D). The upward trend in the concentrations appears to have leveled off or begun to recede in many of these monitoring wells. However, the shutdown has not had a significant negative impact on the downgradient and off-site monitoring wells. Shutting down of the WTP in December 2004 does not appear to have threatened the private and public water supply wells downgradient of the site.

The analytical data collected from the geochemical indicators used to measure the natural attenuation of petroleum compounds in the groundwater monitoring wells essentially indicates that MNA is occurring in the off site wells, as well as on site.

Passive remediation, phytoremediation and monitored natural attenuation (MNA) have been occurring since the end of the irrigation season in November 2009.

8. Recommendations

- 1) GeoTek recommends that groundwater monitoring activities in 2012 be reduced from the current quarterly basis to a semi-annual basis. We recommend monitoring activities be completed in March and September 2012. Semi-annual reports will be provided following each monitoring event.
- 2) It is recommended that monitoring well TC-7 be sampled during the March 2012 monitoring event. Based on the results from the March sampling event, a recommendation will be made concerning sampling of additional wells in the area of TC-7.
- 3) We recommend that the MNA monitoring continue to be completed annually. We anticipate completing the MNA monitoring in approximately June, comparable to 2011.
- 4) GeoTek recommends that sampling of monitoring well GMW-6 be discontinued. Based on the non-detect results for GMW-34 in September and December 2011, it appears that GMW-34 will serve as an acceptable side gradient perimeter well.
- 5) Continued operation of the XiTech system at MW-4R is recommended. The amount of free product in a monitoring well can fluctuate significantly with the seasonal rise and fall of the groundwater level. Therefore, we recommend continued operation of the Xitech system to determine if the recovery rate increases with seasonal groundwater level changes.
- 6) The 2009 EPA Five Year Review Report contained a recommendation that Vogel's place an environmental covenant (s) on-site and off-site. Environmental covenants would provide specific activity and land use limitations on-site and off-site including restrictions on groundwater use; drinking well installation activities; and excavation activities and construction activities in the lead contaminated soils area on-site. The environmental covenants would need to be established and executed pursuant to Iowa Code Chapter 455I and filed with the Sioux County, Iowa Recorder/Registrar Office. It is recommended that Vogel's set a goal to complete the on-site environmental covenant in 2012 and the off-site covenant by the end of 2013. GeoTek will assist Vogel's with meeting this goal.
- 7) The 2009 EPA Five Year Review Report also contained a recommendation to complete a ROD Amendment, ESD, or other appropriate mechanisms to document the post-ROD changes. Continued implementation of the recommendations listed above will provide information to help support post-ROD changes to the groundwater remedy. It is recommended that Vogel's work with the DNR and set a goal to prepare a ROD amendment by the end of 2013.

9. Standard of Care

Recommendations contained in this report represent our professional opinions. These opinions are based on information currently available and arrived in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this no warranty is implied or intended.

GeoTek Engineering & Testing Services, Inc. appreciates the opportunity of providing our services on this project. Please contact our office if you have any questions regarding the project or the report.

Respectfully submitted,

Keith DeLange
Sr. Project Manager

TABLES

TABLE 1 GROUNDWATER MONITORING DATA (ug/L)								
VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLENES	MEK	CH2CL2	1,2-DCP
Limits		5	1000	700	10000	400		
03/24/2004	BOS	<2	<2	<2	<5	<5	<5	<5
06/25/2004	BOS	<2	<2	<2	<5	<5	<5	<5
09/27/2004	BOS	<2	<2	<2	<5	<5	<5	<5
12/14/2004	BOS	<2	<2	<2	<5	<5	<5	<5
03/16/2005	BOS	<2	<2	<2	<5	<5	<5	<5
06/20/2005	BOS	<2	<2	<2	<5	<5		
12/22/2005	BOS	<2	<2	<2	<5	<5		
11/13/2006	BOS	<2	<2	<2	<5	<5		
11/19/2007	BOS	<2	<2	<2	<5	<5		
11/20/2008	BOS	<2	<2	<2	<5	<5		
11/06/2009	BOS	1	<1	<1	<4	<10		
10/05/2010	BOS	<0.195	<0.196	<0.211	<0.407	<0.722		
09/27/2011	BOS	<0.5	<1	<1	<3	<10		
03/24/2004	NIESS	<2	<2	<2	<5	<5	<5	<5
06/25/2004	NIESS	<2	<2	<2	<5	<5	<5	<5
09/27/2004	NIESS	<2	<2	<2	<5	<5	<5	<5
12/14/2004	NIESS	<2	<2	<2	<5	<5	<5	<5
03/16/2005	NIESS	<2	<2	<2	<5	<5		
06/20/2005	NIESS	<2	<2	<2	<5	<5		
12/22/2005	NIESS	<2	<2	<2	<5	<5		
11/13/2006	NIESS	<2	<2	<2	<5	<5		
11/19/2007	NIESS	<2	<2	<2	<5	<5		
11/20/2008	NIESS	<2	<2	<2	<5	<5		
12/06/2009	NIESS	<0.5	<1	<1	<4	<10		
10/05/2010	NIESS	<0.195	<0.196	<0.211	<0.407	<0.722		
09/27/2011	NIESS	<0.5	<1	<1	<3	<10		
03/24/2004	GMW-1	<2	<2	<2	<5	<5	<5	<5
06/25/2004	GMW-1	<2	<2	<2	<5	<5	<5	<5
09/27/2004	GMW-1	<2	<2	<2	<5	<5	<5	<5
12/14/2004	GMW-1	<2	<2	<2	<5	<5	<5	<5
03/16/2005	GMW-1	<2	<2	<2	<5	<5	<5	<5
06/20/2005	GMW-1	<2	<2	<2	<5	<5		
12/22/2005	GMW-1	<2	<2	<2	<5	<5		
11/19/2007	GMW-1	<2	<2	<2	<5	<5		
02/28/1996	GMW-2	19	3090	15000	33200	2250		
09/30/1996	GMW-2	<20	290	2330	9280	<5		
08/27/1997	GMW-2	<20	2360	15200	42200	53		
08/27/1997	GMW-2	<20	1930	10600	26400	<50		
03/20/1998	GMW-2	12	7380	10900	26800	15		
03/27/2001	GMW-2	<2	76	1420	16900	<5		
10/04/2001	GMW-2	<20	170	1090	9260	<50		
12/14/2001	GMW-2	<20	106	298	3580	<50		
03/29/2002	GMW-2	<2	144	920	4990	<50		
06/27/2002	GMW-2	<20	114	960	4810	<50		
09/26/2002	GMW-2	<20	160	1350	7130	<50		
12/11/2002	GMW-2	<20	504	2370	11820	<50		
05/14/2008	GMW-2	<2	<2	<2	<5	<10		
08/07/2008	GMW-2	<2	<2	<2	<5	<10		
08/27/2008	GMW-2	<2	<2	<2	<5	<10		
10/27/2008	GMW-2	<2	<2	<2	<5	<10		
05/12/2009	GMW-2	<2	<2	<2	<3			
07/08/2009	GMW-2	<2	<2	<2	<3			
09/17/2009	GMW-2	<2	5	19	87			
03/24/2004	GMW-3	<2	<2	<2	<5	<5		
06/25/2004	GMW-3	<2	<2	<2	<5	<5		
09/27/2004	GMW-3	<2	<2	<2	<5	<5		
12/14/2004	GMW-3	<2	<2	<2	<5	<5		
03/16/2005	GMW-3	<2	<2	<2	<5	<5		
06/20/2005	GMW-3	<2	<2	<2	<5	<5		
12/22/2005	GMW-3	<2	<2	<2	<5	<5		
11/13/2006	GMW-3	<2	<2	<2	<5	<5		
11/19/2007	GMW-3	<2	<2	<2	<5	<5		
11/20/2008	GMW-3	<2	<2	<2	<5	<5		
11/06/2009	GMW-3	<0.5	<1	<1	<4	<10		
10/05/2010	GMW-3	<0.195	<0.196	<0.211	<0.407	<0.722		
09/27/2011	GMW-3	<0.5	<1	<1	<3	<10		
03/27/2001	GMW-6	<2	<2	<2	<5	<5		
08/15/2003	GMW-6	<2	<2	<2	<5	<5		
06/25/2004	GMW-6	<2	<2	<2	<5	<5		
03/02/2011	GMW-6	<0.5	<1	<1	<3	<10		
06/09/2011	GMW-6	<0.5	<1	<1	<3	<10		
09/27/2011	GMW-6	<0.5	<1	<1	<3	<10		
12/09/2011	GMW-6	<0.5	<1	<1	<3	<10		
07/17/2003	REPLACED							
07/24/2003	GMW-7R	12	16	5470	15800	<5		
07/28/2003	GMW-7R	36	58	7770	22400	<50		
08/01/2003	GMW-7R	<20	<20	5130	14500	<50		
08/14/2003	GMW-7R	<20	<20	3090	8550	<50	<5	<5
08/29/2003	GMW-7R	<2	<2	210	550	<5	<50	<50
09/26/2003	GMW-7R	5	<5	2480	5860	<5	<50	<50
10/15/2003	GMW-7R	<2	3	3330	5940	<5	<50	<50
11/21/2003	GMW-7R	7	33	4660	9360	<5	<5	<5
12/02/2003	GMW-7R	<2	21	4410	1740	<5	<5	<5
01/13/2004	GMW-7R	<2	160	4880	9920	<5	<5	<5
02/04/2004	GMW-7R	5	84	3440	7210	<5	<5	<5
03/24/2004	GMW-7R	4	24	2620	6270	<5	<5	<5

TABLE 1 GROUNDWATER MONITORING DATA (ug/L) VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLNES	MEK	CH2CL2	1,2-DCP
Limits		5	1000	700	10000	400		
04/30/2004	GMW 7R	<2	<2	1280	3400	<5	<5	<5
05/27/2004	GMW-7R	<2	<2	1430	3780	<5	<5	<5
06/23/2004	GMW 7R	<2	<2	1770	4230	<5	<5	<5
07/19/2004	GMW 7R	<2	<2	95	204	<5	<5	<5
09/27/2004	GMW-7R	<2	<2	<2	<5	<5	<5	<5
10/27/2004	GMW-7R	<2	<2	26	51	<5	<5	<5
12/14/2004	GMW-7R	<2	<2	314	1010	<5	<5	<5
01/18/2005	GMW-7R	<2	<2	500	1350	<5	<5	<5
02/28/2005	GMW-7R	<2	<2	835	2470	<5	<5	<5
03/16/2005	GMW-7R	<2	<2	439	1030	<5	<5	<5
04/07/2005	GMW-7R	62	460	690	1840	<5	<5	<5
05/24/2005	GMW-7R	<20	<20	749	2650	<50	<5	<5
06/20/2005	GMW-7R	<2	<2	930	2720	<5	<5	<5
08/12/2005	GMW-7R	<2	<2	3720	5060	<5	<5	<5
09/29/2005	GMW-7R	<2	<2	3150	7970	<5	<50	<50
10/24/2005	GMW-7R	<2	<2	2270	6190	<5	<5	<5
12/02/2005	GMW-7R	<2	<2	1810	5520	<5	<5	<5
12/22/2005	GMW-7R	<2	<2	1770	5340	<5	<5	<5
01/31/2006	GMW-7R	<2	<2	2070	6330	<5	<5	<5
02/22/2006	GMW-7R	<20	<20	981	3550	<50	<5	<5
03/20/2006	GMW-7R	<20	<20	1230	4030	<50	<5	<5
04/19/2006	GMW-7R	<20	<20	1880	6220	<50	<5	<5
05/16/2006	GMW-7R	<20	<20	1220	4050	<50	<50	<50
06/19/2006	GMW-7R	<20	<20	2180	7200	<50		
07/17/2006	GMW-7R	<2	<2	896	3040	<5		
08/21/2006	GMW-7R	<20	<20	2100	6970	<50		
09/8/2006	GMW-7R	<20	<20	2200	7470	<5		
10/16/2006	GMW-7R	<20	<20	2420	7400	<50		
11/13/2006	GMW-7R	<20	<20	2820	8910	<50		
12/14/2006	GMW-7R	<20	<20	1350	4480	<50		
01/15/2007	GMW-7R	<20	<20	1620	5090	<50		
02/15/2007	GMW-7R	2	<2	1640	5890	<50		
03/06/2007	GMW-7R	<2	<2	2310	7270	<50		
04/16/2007	GMW-7R	<2	<2	2750	7540	<5		
05/16/2007	GMW-7R	<2	<2	2940	8570	<5		
06/20/2007	GMW-7R	<2	<2	2180	6411	<5		
07/16/2007	GMW-7R	<2	<2	2070	6090	<5		
08/17/2007	GMW-7R	<2	<2	1240	4370	<5		
09/17/2007	GMW-7R	<2	<2	1380	4850	<5		
10/22/2007	GMW-7R	<2	<2	1790	6580	<10		
11/19/2007	GMW-7R	4	<2	2270	7230	<10		
12/14/2007	GMW-7R	4	<2	2020	6940	<10		
1/17/08	GMW-7R	3	<2	1320	4610	<10		
02/22/2008	GMW-7R	3	<2	2320	7700	<10		
03/24/2008	GMW-7R	4	<2	2370	7500	<10		
04/22/2008	GMW-7R	5	<2	2700	8800	<10		
05/14/2008	GMW-7R	3	<2	1280	4090	<10		
06/23/2008	GMW-7R	3	2	1800	5720	<10		
07/18/2008	GMW-7R	3	4	938	3300	<10		
08/18/2008	GMW-7R	3	4	1060	3320	<10		
09/30/2008	GMW-7R	<2	<2	642	2180	<10		
10/27/2008	GMW-7R	3	<2	1300	4910	<10		
11/20/2008	GMW-7R	3	<2	2070	6290	<10		
12/8/2008	GMW-7R	4	<2	1980	5830	<10		
01/19/2009	GMW-7R	3	<2	1460	4670	<10		
03/11/2009	GMW-7R	<25	<25	2450	8000			
06/25/2009	GMW-7R	4	<2	2260	6770			
09/17/2009	GMW-7R	5	<2	2750	9700			
11/06/2009	GMW-7R	4	<1	3350	12400	<10		
03/8/2010	GMW-7R	2	<1.0	2600	10100	<10		
06/17/2010	GMW-7R	<10	<20	1570	5420	<200		
10/05/2010	GMW-7R	<19.5	<19.6	2500	8850	<72.2		
12/07/2010	GMW-7R	<10	<20	2480	8150	<200		
03/02/2011	GMW-7R	<10	<20	2000	6970	<200		
06/09/2011	GMW-7R	<10	<20	1100	4160	<200		
09/27/2011	GMW-7R	<10	<20	3090	.11600	<200		
12/09/2011	GMW-7R	<10	<20	1850	6670	<200		
		Average		2103	5165			
03/24/2004	GMW-8	<2	<2	<5	<5			
06/25/2004	GMW-8	<2	<2	<5	<5			
09/27/2004	GMW-8	<2	<2	<5	<5			
12/14/2004	GMW-8	<2	<2	<5	<5			
03/16/2005	GMW-8	<2	<2	<5	<5			
06/20/2005	GMW-8	<2	<2	<5	<5			
12/22/2005	GMW-8	<2	<2	<5	<5			
11/13/2006	GMW-8	<2	<2	<5	<5			
11/19/2007	GMW-8	<2	<2	<5	<10			
11/20/2008	GMW-8	<2	<2	<5	<10			
11/06/2009	GMW-8	<0.5	<1	<4	<4	<10		
10/05/2010	GMW-8	<0.195	<0.195	<0.211	<0.407	<0.722		
09/27/2011	GMW-8	<0.5	<1	<3	<10			
03/29/2002	GMW-9R	<20	14300	23400	80400	<50		
06/27/2002	GMW-9R	<20	4710	12500	48900	<50		
09/26/2002	GMW-9R	84	8670	13100	50500	<50		
12/11/2002	GMW-9R	48	32200	33440	115000	<5		
03/26/2003	GMW-9R	<20	7400	16100	53600	<5		
06/12/2003	GMW-9R	<20	5610	12700	44700	<50		
08/15/2003	GMW-9R	5	3100	3200	24700	<50	<5	<5
12/02/2003	GMW-9R	<20	4540	10900	24100	<50	<50	<50
03/24/2004	GMW-9R	11	3750	10100	23100	<50	<50	<50
06/25/2004	GMW-9R	<20	7420	15200	54300	<50	<50	<50
09/27/2004	GMW-9R	<20	9970	15500	55700	<50	<50	<50
12/14/2004	GMW-9R	<20						

TABLE 1 GROUNDWATER MONITORING DATA (ug/L)								
VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLENES	MEK	CH2CL2	1,2-DCP
03/16/2005	GMW-9R	5	1000	700	10000	400	<50	<50
06/20/2005	GMW-9R	<20	3530	8310	29300	<50	<50	<50
12/22/2005	GMW-9R	<20	4250	8790	32000	<50	<50	<50
03/20/2006	GMW-9R	<20	5390	17000	55100	<50	<50	<50
06/19/2006	GMW-9R	<20	1110	4380	14800	<50	<50	<50
06/19/2006	GMW-9R	<20	3670	13600	42800	<50	<50	<50
09/8/2006	GMW-9R	<20	2720	7900	23300	<50		
11/13/2006	GMW-9R	<20	2980	7880	24100	<50		
03/06/2007	GMW-9R	<20	2910	6250	19300	<50		
06/20/2007	GMW-9R	<20	1930	4210	12100	<50		
11/19/2007	GMW-9R	<20	1740	5750	18300	<50		
03/24/2008	GMW-9R	21	1810	6620	23200	<100		
06/23/2008	GMW-9R	6	1110	4640	9230	<10		
08/07/2008	GMW-9R	<20	340	1430	4630	<100		
08/27/2008	GMW-9R	53	245	1600	5220	<100		
09-19-08	GMW-9R	<2	8	407	1410	<10		
10/27/2008	GMW-9R	7	1180	3550	12800	<10		
11/20/2008	GMW-9R	11	2370	8720	27400	<10		
03/11/2009	GMW-9R	<25	6960	17400	66400			
05/12/2009	GMW-9R	12	2780	9680	34700			
06/25/2009	GMW-9R	6	1280	5200	16200			
09/17/2009	GMW-9R	16	4150	12200	43600			
11/06/2009	GMW-9R	10	2300	11900	45600	<100		
03/18/2010	GMW-9R	13	4270	8910	35600	15		
06/17/2010	GMW-9R	<50	3020	11600	40400	<1000		
10/05/2010	GMW-9R	<19.5	1400	9650	33200	<72.2		
12/07/2010	GMW-9R	7	574	4850	18300	<100		
03/02/2011	GMW-9R	<50	3830	13200	50400	<1000		
06/09/2011	GMW-9R	<50	2350	9240	32500	<1000		
09/27/2011	GMW-9R	60	2630	14700	58400	<1000		
12/09/2011	GMW-9R	<50	3580	17900	66800	<1000		
09/30/1996	GMW-10	97	8260	17900	45900	<50		
03/26/1997	GMW-10	<24	480	14100	18900	63		
06/17/1997	GMW-10	79	8230	28900	129000	96		
08/28/1997	GMW-10	43	5600	13000	371000	<50		
11/12/1997	GMW-10	15	1480	6380	25100	<5		
03/20/1998	GMW-10	<2	<2	<2	<5	<5		
03/20/1998	GMW-10	<2	8	520	1220	8		
06/19/1998	GMW-10	17	1800	4510	19500	110		
09/17/1998	GMW-10	49	1930	5950	27300	56		
12/15/1998	GMW-10	31	2200	7070	37800	45		
03/26/1999	GMW-10	26	2010	5320	23600	<5		
06/23/1999	GMW-10	<2	28	190	540	<5		
09/29/1999	GMW-10	<2	<2	2	12	<5		
03/29/2000	GMW-10	<5	6	210	320	<5		
06/29/2000	GMW-10	<2	<2	53	39	16		
07/21/2000	GMW-10	2	250	540	2570			
12/01/2000	REMOVED							
09/25/2001	REPLACED					<50		
03/29/2002	GMW-10	<20	230	7940	29900	<50		
06/27/2002	GMW-10	<20	585	7030	29900	<50		
09/26/2002	GMW-10	7	630	8720	30100	<5		
12/11/2002	GMW-10	<2	336	10520	42600	<50		
06/15/2003	GMW-10	<20	460	4780	20000	<10		
08/07/2008	GMW-10	<2	10	85	346	<100		
08/27/2008	GMW-10	<20	<20	201	644	<100		
10/27/2008	GMW-10	3	191	3630	14500			
05/12/2009	GMW-10	11	890	6940	23500			
07/08/2009	GMW-10	10	378	6440	20900			
09/17/2009	GMW-10	3	72	875	3060			
09/29/2001	INSTALLED					<5		
03/29/2002	GMW-13	115	4220	24900	93200	<50		
06/27/2002	GMW-13	<20	4700	16900	63600	<50		
09/26/2002	GMW-13	14	6800	22800	78800	<5		
12/11/2002	GMW-13	16	11600	25300	96000	<50		
03/26/2003	GMW-13	<20	10100	24600	73500	<50		
06/12/2003	GMW-13	<20	6150	23100	90400	<50	<50	<50
08/15/2003	GMW-13	10	5410	17300	69400	<50	<50	<50
12/02/2003	GMW-13	<20	10500	23500	87200	<50	<50	<50
03/24/2004	GMW-13	<20	4760	15500	77100	<50	<50	<50
06/25/2004	GMW-13	<20	6850	24400	100000	<50	<50	<50
09/27/2004	GMW-13	<20	13200	37800	135000	<50	<50	<50
12/14/2004	GMW-13	<20	4660	16000	73500	<50	<50	<50
03/16/2005	GMW-13	<20	5280	18400	75900	<50	<50	<50
06/20/2005	GMW-13	<20	6930	20000	78400	<50	<50	<50
12/22/2005	GMW-13	<20	6970	20400	88200	<50		
11/13/2006	GMW-13	<20	8370	20700	87600	<100		
11/19/2007	GMW-13	<20	4350	10300	55800	<100		
11/20/2008	GMW-13	<20	6160	13400	60400			
06/25/2009	GMW-13	6	9180	16300	68300			
11/06/2009	GMW-13	<50	8330	19900	112000	<1000		
10/05/2010	GMW-13	<19.5	11200	25100	109000	<72.2		
09/27/2011	GMW-13	<50	5430	16900	77400	<1000		
	GMW-15					<50		
07/18/2003	TW-2	2	30	1350	1690	<50		
07/28/2003	TW-2	<20	48	2190	3250	<5		
08/01/2003	TW-2	<20	<20	5130	14500	<5		
08/14/2003	TW-2	<2	50	566	1400	<5	<5	<5
09/29/2003	GMW-15	<2	<2	640	1980	<5	<5	<5
12/02/2003	GMW-15	<2	11	1970	4580	<5	<5	<5
01/13/2004	GMW-15	<2	24	2340	4440	<5	<5	<5
03/24/2004	GMW-15	3	20	2020	4800	<5	<5	<5
06/25/2004	GMW-15	<2	<2	294	673	<5	<5	<5

TABLE 1 GROUNDWATER MONITORING DATA (ug/L)								
VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLNES	MEK	CH2CL2	1,2-DCP
Limits		5	1000	700	10000	400		
09/27/2004	GMW-15	<2	<2	>2	6	<5	<5	<5
12/14/2004	GMW-15	<2	<2	>2	<5	<5	<5	<5
01/18/2005	GMW-15	<2	<2	2	20	<5	<5	<5
02/28/2005	GMW-15	<2	<2	<2	7	<5	<5	<5
03/16/2005	GMW-15	<2	<2	<2	7	<5	<5	<5
04/07/2005	GMW-15	<2	<2	8	19	<5	<5	<5
05/24/2005	GMW-15	<2	<2	79	243	<5	<5	<5
06/20/2005	GMW-15	<2	<2	913	2360	<5	<5	<5
08/12/2005	GMW-15	<2	<2	2860	6470	<5	<5	<5
09/29/2005	GMW-15	<2	<2	4880	7630	<5	<5	<5
10/24/2005	GMW-15	<2	<2	2790	5260	<5	<5	<5
12/02/2005	GMW-15	<2	<2	3040	8230	<5	<5	<5
12/22/2005	GMW-15	<2	61	2550	5920	<50	<5	
01/31/2006	GMW-15	<2	61	2880	7430	<50	<5	<5
02/22/2006	GMW-15	<20	<20	2530	5664	<50	<50	
03/20/2006	GMW-15	<20	<20	2610	6140	<5		
04/19/2006	GMW-15	<20	<20	2170	4070	<5		
05/16/2006	GMW-15	<5	4	1370	2300	<5		
06/19/2006	GMW-15	7	<2	3800	6200	<50		
07/17/2006	GMW-15	6	<2	2020	3760	<50		
08/21/2006	GMW-15	<20	<20	4400	10100	<50		
09/18/2006	GMW-15	<20	<20	4870	11000	<50		
10/16/2006	GMW-15	<20	<20	5630	12400	<50		
11/13/2006	GMW-15	<20	<20	6010	13100	<50		
12/14/2006	GMW-15	<20	<20	3350	9090	<50		
01/15/2007	GMW-15	<20	<20	4590	9540	<50		
02/15/2007	GMW-15	5	<2	3550	7360	<50		
03/06/2007	GMW-15	<20	<20	3080	6500	<50		
04/16/2007	GMW-15	<20	<20	1870	3380	<50		
05/16/2007	GMW-15	<20	<20	1900	3790	<50		
06/20/2007	GMW-15	<20	<20	4320	7640	<50		
07/16/2007	GMW-15	<20	<20	4380	10400	<100		
08/17/2007	GMW-15	<20	<20	4330	7550	<100		
09/17/2007	GMW-15	<20	<20	3510	7770	<10		
10/22/2007	GMW-15	<20	<20	1140	2660	<100		
11/19/2007	GMW-15	<2	<2	2610	5500	<100		
12/14/2007	GMW-15	<20	<20	4020	9720	<100		
01/17/2008	GMW-15	<20	25	5120	13800	<100		
02/22/2008	GMW-15	<20	<20	3480	9060	<100		
03/24/2008	GMW-15	<20	<20	1910	5750	<100		
04/22/2008	GMW-15	<20	<20	1770	5680	<100		
05/14/2008	GMW-15	<20	<20	1440	6460	<100		
06/23/2008	GMW-15	<20	<20	2190	9870	<100		
07/18/2008	GMW-15	<20	<20	1600	5840	<100		
08/18/2008	GMW-15	<20	<20	985	4770	<100		
09-19-08	GMW-15	<20	<20	1450	5880	<10		
10/27/2008	GMW-15	<20	<20	491	1560	<100		
11/20/2008	GMW-15	7	<2	699	2000	<100		
12/18/2008	GMW-15	<20	<20	1150	3840			
01/19/2009	GMW-15	<20	<20	1780	6050			
03/1/2009	GMW-15	<25	<25	1550	10850			
05/25/2009	GMW-15	5	2	1540	6210			
09/17/2009	GMW-15	9	<20	1360	7540			
11/06/2009	GMW-15	8	<1	1280	7570	<10		
11/06/2009	GMW-15	<100	<100	380	2400		IDNR Split sample	
03/18/2010	GMW-15	2	5	701	3150	<10		
06/17/2010	GMW-15	6	<10	1650	6410	<100		
10/05/2010	GMW-15	8	2	2640	13600	<7.22		
12/07/2010	GMW-15	6	<10	1090	8870	<100		
03/02/2011	GMW-15	6	<10	1190	4890	<100		
06/09/2011	GMW-15	9	<10	3860	16300	<100		
09/27/2011	GMW-15	11.1	<10	6890	25800	<100		
12/09/2011	GMW-15	14	<10	10200	32600	<100		
	GMW-16					<50		
07/18/2003	TW-1	6	1110	5400	12700	<5		
07/28/2003	TW-1	<20	155	2600	8360	<5		
08/01/2003	TW-1	<20	322	3670	12600	<5	<5	<5
08/14/2003	TW-1	2	25	334	883	<5	<5	<5
09/29/2003	GMW-16	<2	56	189	715	<5	<5	<5
12/02/2003	GMW-16	<2	<2	159	470	<5	<5	<5
01/13/2004	GMW-16	<2	<2	142	324	<5	<5	<5
03/24/2004	GMW-16	<2	<2	635	2220	<5	<5	<5
05/25/2004	GMW-16	<2	<2	113	399	<5	<5	<5
09/27/2004	GMW-16	<2	5	159	397	<5	<5	<5
12/14/2004	GMW-16	<2	<5	75	227	<5	<5	<5
03/16/2005	GMW-16	<2	<5	73	155	<5		
05/20/2005	GMW-16	<2	<5	316	902	<5		
12/22/2005	GMW-16	<2	10	2450	8260	<100		
11/13/2006	GMW-16	<2	27	3720	11100			
11/19/2007	GMW-16	6	33	2870	8940	<50		
11/20/2008	GMW-16	<20	<20	1700	4460	<50		
11/06/2009	GMW-16	5	37	5940	20200	<10	<50	<50
10/05/2010	GMW-16	<19.5	<19.6	4020	11500	<72.2		
09/27/2011	GMW-16	<5	19.3	1080	3060	<100		
07/28/2003	TW-3	29	3310	15400	58800	<5	<50	<50
08/01/2003	TW-3	<20	400	1700	7480	<5	<5	<5
08/14/2003	TW-3	<20	206	1140	4480	<5	<5	<5
09/29/2003	GMW-17	<2	32	42	202	<5	<5	<5
12/02/2003	GMW-17	<2	<2	6	20	<5	<5	<5
03/24/2004	GMW-17	<2	<2	2	10	<5	<5	<5
06/25/2004	GMW-17	<2	<2	19	425	<5	<5	<5
09/27/2004	GMW-17	<2	123	274	1180	<5	<5	<5
12/14/2004	GMW-17	<2	<2	330	1320	<5	<5	<5

TABLE 1 GROUNDWATER MONITORING DATA (ug/L)								
VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLENES	MEK	CH2CL2	1,2-DCP
Limits		5	1000	700	10000	400		
01/18/2005	GMW-17	<2	103	305	1550	<5	<5	<5
02/28/2005	GMW-17	<2	136	250	999	<5	<5	<5
03/16/2005	GMW-17	<2	155	261	996	<5	<5	<5
04/07/2005	GMW-17	<2	56	79	420	<5	<5	<5
05/24/2005	GMW-17	<2	<2	47	519	<5	<5	<5
06/20/2005	GMW-17	<2	<2	40	128	<5		
12/22/2005	GMW-17	<2	<2	109	535	<5		
03/20/2006	GMW-17	<2	<2	<5	<5	<5		
06/19/2006	GMW-17	<2	<2	5	6	<5		
09/18/2006	GMW-17	<2	<2	8	21	<5		
11/13/2006	GMW-17	<2	<2	<2	15	<10		
03/06/2007	GMW-17	<2	<2	<2	<5	<10		
05/20/2007	GMW-17	<2	<2	800	361	<10		
11/19/2007	GMW-17	<2	<2	9	10	<10		
03/24/2008	GMW-17	<2	<2	14	23	<10		
06/23/2008	GMW-17	<2	<2	133	230			
09-19-08	GMW-17	<2	<2	<2	<5			
11/20/2008	GMW-17	<2	<2	<2	<5			
03/11/2009	GMW-17	<1	<1	2	6			
06/25/2009	GMW-17	<2	<2	<2	4	<5		
09/17/2009	GMW-17	5	23	70	325	<5		
11/06/2009	GMW-17	<0.5	<1	2	6	<10		
03/18/2010	GMW-17	<0.5	<1	<1	<3	<10		
06/17/2010	GMW-17	<0.5	<1	20	32	<10		
10/05/2010	GMW-17	<0.195	<0.196	32	57	<0.722		
12/07/2010	GMW-17	<0.5	<1.0	<1.0	<3.0	<10.0		
03/02/2011	GMW-17	<0.5	<1.0	122	327	<10.0		
06/09/2011	GMW-17	<0.5	<1.0	<1.0	<3	<10.0		
09/27/2011	GMW-17	<0.5	<1	5.36	17	<10		
12/09/2011	GMW-17	<0.5	<1	4.68	11	<10		
08/15/2003	TW-6	<2	21	109	341	<5	<5	<5
09/29/2003	GMW-18	<2	<2	120	229	<5	<5	<5
12/02/2003	GMW-18	<2	14	188	522	<5	<5	<5
03/24/2004	GMW-18	<2	9	150	367	<5	<5	<5
06/25/2004	GMW-18	<2	23	220	594	<5	<5	<5
09/27/2004	GMW-18	<2	5	104	243	<5		
12/14/2004	GMW-18	<2	<2	60	174	<5		
03/16/2005	GMW-18	<2	48	393	847	<5		
06/20/2005	GMW-18	<2	6	100	313	<5		
12/22/2005	GMW-18	<2	31	574	1380	<5		
11/13/2006	GMW-18	<2	21	474	1030			
11/19/2007	GMW-18	<2	<2	8	27	<5		
11/20/2008	GMW-18	<2	47	210	677	<5		
11/06/2009	GMW-18	<0.500	36	195	565	<10	<5	<5
10/05/2010	GMW-18	WELL SEAL FAILED						
01/26/2011	GMW-18R	WELL REPLACE WITH GMW-18R						
02/04/2011	GMW-18R	<0.5	64.10	241	737	31		
09/27/2011	GMW-18R	<0.5	<1	6.85	35.6	<10		
08/15/2003	TW-4	<2	<2	8	21	<5	<5	<5
09/29/2003	GMW-19	<2	<2	<2	<5	<5	<5	<5
10/15/2003	GMW-19	<2	<2	<2	<5	<5	<5	<5
11/21/2003	GMW-19	<2	<2	<2	<5	<5	<5	<5
12/02/2003	GMW-19	<2	<2	<2	<5	<5	<5	<5
01/13/2004	GMW-19	<2	<2	<2	<5	<5	<5	<5
02/04/2004	GMW-19	<2	<2	<2	<5	<5	<5	<5
03/24/2004	GMW-19	<2	<2	104	120	<5	<5	<5
04/30/2004	GMW-19	<2	<2	<2	7	<5	<5	<5
05/27/2004	GMW-19	<2	<2	<2	<5	<5	<5	<5
06/23/2004	GMW-19	<2	<2	240	397	<5	<5	<5
07/19/2004	GMW-19	<2	<2	121	140	<5	<5	<5
09/27/2004	GMW-19	<2	<2	3	13	<5	<5	<5
10/27/2004	GMW-19	<2	<2	13	143	<5		
12/14/2004	GMW-19	<2	<2	8	48	<5		
03/16/2005	GMW-19	<2	<2	637	1050	<5		
12/22/2005	GMW-19	<2	<2	21	73	<5		
03/20/2006	GMW-19	<2	<2	<2	<2	<5		
05/19/2006	GMW-19	<2	<2	11	71	<5		
09/18/2006	GMW-19	<2	<2	<2	<2	<5		
11/13/2006	GMW-19	<2	<2	<2	<2	<10		
03/06/2007	GMW-19	<2	<2	<2	6	<10		
06/20/2007	GMW-19	<2	<2	408	1610	<10		
11/19/2007	GMW-19	<2	<2	376	1850	<10		
03/24/2008	GMW-19	<2	<2	4	704	<10		
06/23/2008	GMW-19	2	<2	608	3040			
09-19-08	GMW-19	<2	<2	207	702			
11/20/2008	GMW-19	<2	<2	97	732			
03/11/2009	GMW-19	<1	<1	17	536			
06/25/2009	GMW-19	<2	<2	<2	160			
09/17/2009	GMW-19	<2	<2	233	810	<50		
11/06/2009	GMW-19	1	<1	42	1120	<10		
03/18/2010	GMW-19	3	<1	572	4280	<10		
06/17/2010	GMW-19	<5	<10	984	3900	<100		
10/05/2010	GMW-19	<0.975	<0.980	403	1120	<3.61		
12/07/2010	GMW-19	<2.5	<5	574	2320	<50		
03/02/2011	GMW-19	<2.5	<5	92	362	<50		
06/09/2011	GMW-19	<2.5	<5	286	844	<50		
09/27/2011	GMW-19	<2.5	<5	137	477	<50		
12/09/2011	GMW-19	1	<1	25	247	<10		
		Average						
					231	897		
08/15/2003	TW-5	<20	<20	1020	2990	<5	<5	<5
09/29/2003	GMW-20	<2	<2	66	176	<5	<5	<5
10/15/2003	GMW-20	<2	<2	420	1530	<5	<5	<5

TABLE 1 GROUNDWATER MONITORING DATA (ug/L)								
VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLENES	MEK	CH2CL2	1,2-DCP
Limits		5	1000	700	10000	400		
11/21/2003	GMW 20	<2	7	1320	4640	<5	<5	<5
12/02/2003	GMW 20	<2	<2	743	2520	<5	<5	<5
01/13/2004	GMW 20	<2	<2	560	2060	<5	<5	<5
02/04/2004	GMW 20	<2	<2	2	10	<5	<5	<5
03/24/2004	GMW 20	<2	<2	134	483	<5	<5	<5
04/30/2004	GMW 20	<2	<2	<2	<5	<5	<5	<5
05/27/2004	GMW 20	<2	<2	447	1280	<5	<5	<5
06/23/2004	GMW 20	<2	<2	18	41	<5	<5	<5
07/19/2004	GMW 20	<2	<2	250	794	<5	<5	<5
09/27/2004	GMW 20	<2	<2	11	30	<5	<5	<5
10/27/2004	GMW 20	<2	<2	<2	<5	<5		
12/14/2004	GMW 20	<2	<2	29	94	<5		
03/16/2005	GMW 20	<2	<2	32	117	<5		
12/22/2005	GMW 20	<2	<2	94	319	<50		
03/20/2006	GMW 20	<2	<2	239	643	<5		
05/19/2006	GMW 20	<2	<2	8	17	<5		
09/18/2006	GMW 20	<20	<20	352	861	<5		
11/13/2006	GMW 20	<2	<2	493	1040	<10		
03/06/2007	GMW 20	<2	<2	896	2290	<10		
05/20/2007	GMW 20	<2	<2	398	900	<10		
11/19/2007	GMW 20	<2	3	820	2460	<10		
03/24/2008	GMW 20	<2	3	343	1050	<10		
05/23/2008	GMW 20	<2	<2	124	336			
09/19/08	GMW 20	<2	<2	109	287			
11/20/2008	GMW 20	<2	<2	324	801			
03/11/2009	GMW 20	<1	<1	280	960			
06/25/2009	GMW 20	<2	<2	220	628			
09/17/2009	GMW 20	<2	6	506	1480			
11/06/2009	GMW 20	2	1	751	2820	<10		
03/18/2010	GMW 20	<0.5	<1	3	6	<10		
06/17/2010	GMW 20	1	<1	398	1170	<10		
10/05/2010	GMW 20	<0.195	<0.196	29	75	<0.722		
12/07/2010	GMW 20	<0.5	<1	21	58	<10.0		
03/02/2011	GMW 20	2	<1	1050	2950	<10.0		
06/09/2011	GMW 20	<0.5	<1	6	14	<10.0		
09/27/2011	GMW 20	<0.5	<1	63.3	184	<10		
12/09/2011	GMW 20	1	<1	356	1160	<10		
		Average		340	1034			
04/05/2004	GMW 21	<2	<2	4580	10800	<5	<5	<5
04/07/2004	GMW 21	8	13	5300	12200	<5	<5	<5
04/30/2004	GMW 21	<2	<2	1070	2940	<5	<5	<5
05/27/2004	GMW 21	<2	<2	2460	6740	<5	<5	<5
06/23/2004	GMW 21	<2	<2	2510	6860	<5	<5	<5
07/19/2004	GMW 21	<2	<2	2890	9410	<5	<5	<5
09/27/2004	GMW 21	<2	15	2870	9610	<5	<50	<50
10/27/2004	GMW 21	<2	<20	6760	27200	<50	<50	<50
12/14/2004	GMW 21	<2	<20	2380	12600	<50	<50	<50
01/18/2005	GMW 21	<2	49	3670	10100	<50	<5	<5
02/28/2005	GMW 21	<20	<20	2330	7300	<5	<5	<5
03/16/2005	GMW 21	<20	<20	2740	8220	<5	<5	<5
04/07/2005	GMW 21	5	36	2450	6710	<5	<5	<5
05/24/2005	GMW 21	<2	24	1890	4900	<5	<5	<5
06/20/2005	GMW 21	<2	<20	1020	3310	<5	<5	<5
08/30/2005	GMW 21	<2	3	367	778	<5	<5	<5
09/29/2005	GMW 21	<2	<2	1240	2920	<5	<5	<5
10/24/2005	GMW 21	<2	<2	1890	6010	<5	<5	<5
12/02/2005	GMW 21	<2	<2	1580	4080	<5		
12/22/2005	GMW 21	<2	211	2880	12800	<5		
01/31/2006	GMW 21	<2	<2	1680	3990	<5		
02/22/2006	GMW 21	<2	<2	1230	2710	<5		
03/20/2006	GMW 21	<2	<2	1020	2190	<5		
04/19/2006	GMW 21	<2	<2	1430	3130	<75		
05/16/2006	GMW 21	<2	<2	1250	3010	<50		
06/19/2006	GMW 21	4	<2	1902	4950	<50		
07/17/2006	GMW 21	<30	<30	2590	6410	<50		
08/21/2006	GMW 21	<20	<20	3590	8520	<50		
09/18/2006	GMW 21	<20	<20	4330	10100	<50		
10/16/2006	GMW 21	6	<2	4440	9330	<50		
11/13/2006	GMW 21	<20	<20	4190	8890	<50		
12/14/2006	GMW 21	<20	<20	3170	7020	<50		
01/15/2007	GMW 21	<20	<20	3210	6930	<50		
02/15/2007	GMW 21	5	<2	2570	6660	<50		
03/06/2007	GMW 21	<20	<20	2960	7630	<50		
04/16/2007	GMW 21	<20	<20	3820	8050	<50		
05/16/2007	GMW 21	<20	<20	3270	7930	<50		
06/20/2007	GMW 21	<20	<20	3670	9530	<100		
07/16/2007	GMW 21	<20	<20	3800	10300	<100		
08/17/2007	GMW 21	<20	<20	4020	12400	<10		
09/17/2007	GMW 21	<20	<20	4190	12300	<100		
10/22/2007	GMW 21	<20	<20	3800	13400	<100		
11/19/2007	GMW 21	7	12	2670	7730	<100		
12/14/2007	GMW 21	<20	<20	3110	9310	<100		
01/17/2008	GMW 21	<20	<20	3450	10200	<100		
02/22/2008	GMW 21	<20	<20	4040	11700	<100		
03/24/2008	GMW 21	<20	<20	2430	7030	<100		
04/22/2008	GMW 21	<20	<20	4240	12000			
05/14/2008	GMW 21	<20	<20	2500	6830			
06/23/2008	GMW 21	<20	<20	2580	6750	<100		
08/18/2008	GMW 21	11	<2	3340	9240	<100		
09/19/2008	GMW 21	<20	<20	2820	8500	<100		
10/27/2008	GMW 21	<20	<20	3160	9150	<100		
11/20/2008	GMW 21	<20	<20	4890	11800			
12/18/2008	GMW 21	3	<2	1440	3510			
01/19/2009	GMW 21	<20	<20	1830	5360			

TABLE 1 GROUNDWATER MONITORING DATA (ug/L)								
VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLENES	MEK	CH2CL2	1,2-DCP
Limits		5	1000	700	10000	400		
03/11/2009	GMW-21	<25	<25	2800	6640			
06/25/2009	GMW-21	3	<2	1680	4880			
09/17/2009	GMW-21	7	<2	3100	8580			
11/06/2009	GMW-21	4	<1	3230	10100	<10		
11/06/2009	GMW-21	<100	<100	2400	7300			IDNR Split Sample
03/18/2010	GMW-21	3	<100	968	3600	<10		
06/17/2010	GMW-21	<5	<10	443	1840	<100		
10/05/2010	GMW-21	<3.90	<3.92	578	2300	<14.4		
12/07/2010	GMW-21	<10.0	<20.0	1120	4470	<200		
03/02/2011	GMW-21	<10.0	<20.0	617	2630	<200		
06/09/2011	GMW-21	23	23	774	3040	<200		
09/27/2011	GMW-21	<10	<20	411	1730	<200		
12/09/2011	GMW-21	<5	<10	1030	3560	<100		
		Average		2618	7402			
04/05/2004	GMW-22	<2	<2	3270	6220	<5	<5	<5
04/07/2004	GMW-22	5	<2	2230	4710	<5	<5	<5
04/30/2004	GMW-22	<2	<2	<2	5	<5	<5	<5
05/27/2004	GMW-22	<2	<2	1410	2440	<5	<5	<5
06/23/2004	GMW-22	<2	<2	3470	5400	<5	<5	<5
07/19/2004	GMW-22	<2	<2	2910	3890	<5	<5	<5
09/27/2004	GMW-22	<20	<20	2070	3440	<5		
10/27/2004	GMW-22	<20	<20	2080	3090	<5		
12/14/2004	GMW-22	<2	<2	635	1200	<5	<5	<5
03/16/2005	GMW-22	<2	<2	641	1220	<5	<5	<5
11/20/2008	GMW-22	4	<2	151	2990	<5	<5	<5
04/05/2004	GMW-23	<2	<2	26	67	<5	<5	<5
04/07/2004	GMW-23	<2	<2	<2	<5	<5	<5	<5
04/30/2004	GMW-23	<2	<2	<2	<5	<5	<5	<5
05/27/2004	GMW-23	<2	<2	<2	<5	<5	<5	<5
06/23/2004	GMW-23	<2	<2	<2	<5	<5	<5	<5
07/19/2004	GMW-23	<2	<2	<2	<5	<5	<5	<5
09/27/2004	GMW-23	<2	<2	6	38	<5		
10/27/2004	GMW-23	<2	<2	<2	<5	<5		
12/14/2004	GMW-23	<2	<2	3	40	<5	<5	<5
03/16/2005	GMW-23	<2	<2	<2	<5	<5		
04/12/2006	GMW-23	<2	<2	<2	<5	<5	<5	<5
11/17/2004	SB-1	8	11	3790	9630		<5	<5
11/17/2004	SB-2	<2	<2	<2	<5		<50	<50
11/18/2004	SB-3	<2	<2	<2	<5		<5	<5
11/18/2004	SB-4	<20	7890	23800	96900	<5	<5	<5
11/22/2004	GMW-24	<2	<2	<2	<5			
12/14/2004	GMW-24	<2	<2	<2	<5			
03/16/2005	GMW-24	<2	<2	<2	<5	<5	<5	<5
04/12/2006	GMW-24	<2	<2	<2	<5	<5	<5	<5
11/23/2004	GMW-25	<2	413	653	3680	<5	<5	<5
12/14/2004	GMW-25	<2	234	506	2030	<5	<5	<5
01/18/2005	GMW-25	<2	318	744	2860	<5	<5	<5
02/28/2005	GMW-25	<2	177	613	2060	<5	<5	<5
03/16/2005	GMW-25	<2	226	638	2250	<5	<5	<5
04/07/2005	GMW-25	<2	163	498	1760	<5	<5	<5
05/24/2005	GMW-25	<2	107	338	1030	<5	<5	<5
06/20/2005	GMW-25	<2	59	191	648	<5	<5	<5
08/30/2005	GMW-25	<2	<2	88	189	<5	<5	<5
09/29/2005	GMW-25	<2	<2	57	123	<5	<5	<5
10/24/2005	GMW-25	<2	<2	68	141	<5	<5	<5
12/02/2005	GMW-25	<2	<2	22	<5			
12/22/2005	GMW-25	<2	<2	50	29	<5		
01/31/2006	GMW-25	<2	<2	<2	<5			
02/22/2006	GMW-25	<2	<2	17	<5			
03/20/2006	GMW-25	<2	<2	29	51			
04/19/2006	GMW-25	<2	<2	16	54	<5		
05/16/2006	GMW-25	<2	<2	10	31	<5		
06/19/2006	GMW-25	<2	<2	<2	6	<5		
07/17/2006	GMW-25	<2	3	18	63	<5		
08/21/2006	GMW-25	<2	9	87	254	<5		
09/18/2006	GMW-25	<2	9	83	250	<5		
10/16/2006	GMW-25	<2	10	95	262	<5		
11/13/2006	GMW-25	<2	10	79	231	<5		
12/14/2006	GMW-25	<2	<2	<2	25	<5		
01/15/2007	GMW-25	<2	<2	7	29	<5		
02/15/2007	GMW-25	<2	<2	9	35	<5		
03/06/2007	GMW-25	<2	<2	<2	<2	<5		
04/16/2007	GMW-25	<2	3	11	50	<5		
05/16/2007	GMW-25	<2	9	33	128	<5		
06/20/2007	GMW-25	<2	6	23	87	<10		
07/16/2007	GMW-25	<2	6	23	85	<10		
08/17/2007	GMW-25	<2	7	30	110	<10		
09/17/2007	GMW-25	<2	10	38	165	<10		
10/22/2007	GMW-25	<2	<2	26	91	<10		
11/19/2007	GMW-25	<2	<2	26	113	<10		
12/14/2007	GMW-25	<2	<2	35	238	<10		
01/17/2008	GMW-25	<2	<2	33	164	<10		
02/22/2008	GMW-25	<2	<2	63	272	<10		
03/24/2008	GMW-25	<2	<2	66	247	<10		
04/22/2008	GMW-25	<2	<2	16	51	<10		
05/14/2008	GMW-25	<2	<2	10	32	<10		
06/23/2008	GMW-25	<2	<2	13	76	<10		

TABLE 1 GROUNDWATER MONITORING DATA (ug/L) VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLNES	MEK	CH2CL2	1,2-DCP
Limits		5	1000	700	10000	400		
07/18/2008	GMW-25	<2	<2	28	330	<10		
08/8/2008	GMW-25	<2	<2	74	365	<10		
09/19/08	GMW-25	<2	<2	72	273	<10		
10/27/2008	GMW-25	<2	<2	<2	<5	<10		
11/20/2008	GMW-25	<2	<2	18	75			
12/1/2008	GMW-25	<2	<2	<2	18			
01/1/2009	GMW-25	<2	<2	<2	13			
03/1/2009	GMW-25	<1	<1	2	9			
06/25/2009	GMW-25	<2	7	26	128	<5		
09/1/2009	GMW-25	<2	2	18	346			
11/6/2009	GMW-25	1	<1	2	98	<10		
03/18/2010	GMW-25	1	<1	15	306	<10		
06/17/2010	GMW-25	<0.5	<1	164	388	<10		
10/05/2010	GMW-25	<0.195	<0.195	27	264	<0.722		
12/07/2010	GMW-25	<0.5	<1	10	56	<10		
03/02/2011	GMW-25	<0.5	2	242	715	<10		
06/09/2011	GMW-25	<0.5	<1	91	215	<10		
09/27/2011	GMW-25	<0.5	<1	123	367	<10		
12/09/2011	GMW-25	<0.5	<1	38.9	150	<10		
		average		115	423			
11/23/2004	GMW-26	<2	<2	<2	<5	<5	<5	<5
12/14/2004	GMW-26	<2	<2	<2	<5	<5	<5	<5
01/18/2005	GMW-26	<2	<2	<2	<5	<5	<5	<5
02/28/2005	GMW-26	<2	<2	<2	<5	<5	<5	<5
03/1/2005	GMW-26	<2	<2	<2	<5	<5		
04/07/2005	GMW-26	<2	<2	<2	<5	<5		
05/24/2005	GMW-26	<2	<2	<2	<5	<5		
06/20/2005	GMW-26	<2	<2	<2	<5	<5		
04/12/2006	GMW-26	<2	<2	<2	<5	<5		
					<5			
11/23/2004	GMW-27	<2	<2	33	159	<5		
12/14/2004	GMW-27	<2	<2	<2	<5	<5	<5	<5
03/1/2005	GMW-27	<2	<2	61	89	<5	<5	<5
04/12/2006	GMW-27	<2	64	143	548	<5	<5	<5
					<5	<5		
11/24/2004	GMW-28	<2	<2	<2	<5	<5	<5	<5
12/14/2004	GMW-28	<2	<2	<2	<5	<5	<5	<5
03/1/2005	GMW-28	<2	<2	<2	<5	<5		
04/07/2005	GMW-28	<2	<2	<2	<5	<5		
05/24/2005	GMW-28	<2	<2	<2	<5	<5		
06/20/2005	GMW-28	<2	<2	<2	<5	<5		
04/12/2006	GMW-28	<2	<2	<2	<5	<5		
					<5	<5		
11/24/2004	GMW-29	<2	<2	<2	<5	<5	<5	<5
12/14/2004	GMW-29	<2	<2	<2	<5	<5	<5	<5
01/18/2005	GMW-29	<2	<2	<2	<5	<5	<5	<5
02/28/2005	GMW-29	<2	<2	<2	<5	<5	<5	<5
03/16/2005	GMW-29	<2	<2	<2	<5	<5	<5	<5
04/07/2005	GMW-29	<2	<2	<2	<5	<5		
05/24/2005	GMW-29	<2	<2	<2	<5	<5		
06/20/2005	GMW-29	<2	<2	<2	8	<5		
12/22/2005	GMW-29	<2	<2	<2	<5	<5	<5	
03/20/2006	GMW-29	<2	<2	<2	<5	<5	<5	<5
04/12/2006	GMW-29	<2	<2	<2	<5	<5	<5	<5
					<5	<5		
11/29/2004	GMW-30	<2	<2	<2	<5	<5	<5	<5
12/14/2004	GMW-30	<2	<2	<2	<5	<5	<5	<5
01/18/2005	GMW-30	<2	<2	<2	<5	<5	<5	<5
02/28/2005	GMW-30	<2	<2	<2	454	<5	<5	<5
03/15/2005	GMW-30	10	7	<2	299	<5	<5	<5
03/16/2005	GMW-30	6	<2	<2	240	<5	<5	<5
04/07/2005	GMW-30	4	<2	<2	27	<5	<5	<5
05/24/2005	GMW-30	4	<2	<2	19	<5		
06/20/2005	GMW-30	<2	<2	<2	<5	<5		
08/30/2005	GMW-30	<2	<2	<2	<5	<5		
12/22/2005	GMW-30	<2	<2	<2	<5	<5		
03/20/2006	GMW-30	<2	<2	<2	<5	<5		
09/18/2006	GMW-30	<2	<2	<2	<5	<5		
10/1/2006	GMW-30	<2	<2	<2	<5	<5		
11/13/2006	GMW-30	<2	<2	<2	<5	<5		
12/14/2006	GMW-30	<2	<2	<2	<5	<5		
01/15/2007	GMW-30	<2	<2	<2	<5	<5		
02/15/2007	GMW-30	<2	<2	<2	<5	<5		
03/05/2007	GMW-30	<2	<2	<2	<5	<5		
04/16/2007	GMW-30	<2	<2	<2	<5	<5		
05/16/2007	GMW-30	<2	<2	<2	<5	<5		
06/20/2007	GMW-30	<2	<2	<2	<5	<10		
07/16/2007	GMW-30	<2	<2	<2	<5	<10		
08/17/2007	GMW-30	<2	<2	<2	<5	<10		
09/17/2007	GMW-30	<2	<2	<2	<5	<10		
10/22/2007	GMW-30	<2	<2	<2	<5	<10		
11/19/2007	GMW-30	<2	<2	<2	<5	<10		
12/14/2007	GMW-30	<2	<2	<2	<5	<10		
01/17/2008	GMW-30	<2	<2	<2	<5	<10		
02/22/2008	GMW-30	<2	<2	<2	<5	<10		
03/24/2008	GMW-30	2	<2	<2	<5	<10		
04/22/2008	GMW-30	5	<2	<2	<5	<10		
05/14/2008	GMW-30	3	<2	<2	<5	<10		
06/23/2008	GMW-30	2	<2	<2	<5	<10		
07/18/2008	GMW-30	<2	<2	<2	<5	<10		
08/18/2008	GMW-30	<2	<2	<2	<5	<10		
09/19/2008	GMW-30	<2	<2	<2	<5	<10		
10/27/2008	GMW-30	<2	<2	<2	<5	<10		
11/20/2008	GMW-30	5	<2	<2	<5	<10		

TABLE 1								
GROUNDWATER MONITORING DATA (ug/L)								
VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLENES	MEK	CH2CL2	1,2-DCP
Limits		5	1000	700	10000	400		
12/18/2008	GMW-30	<2	<2	<2	<5			
01/19/2009	GMW-30	<2	<2	<2	<5			
03/1/2009	GMW-30	<1	<1	<1	2			
06/25/2009	GMW-30	<2	<2	6	25	<5		
09/17/2009	GMW-30	<2	<2	7	33			
11/05/2009	GMW-30	<0.5	<1	<1	<4	<10		
11/05/2009	GMW-30	<5	<5	<5	<5			IDNR Split Sample
12/03/2009	GMW-30	<0.5	<2	<2	<3			
01/05/2010	GMW-30	<0.5	<1	<1	<6	<10		
03/18/2010	GMW-30	<0.5	<1	<1	<7.5	<10		
06/17/2010	GMW-30	<0.5	<1	<1	<3	<10		
10/05/2010	GMW-30	<0.195	<0.196	<0.211	<0.407	<0.722		
12/07/2010	GMW-30	<0.5	<1	<1	<3	<10		
03/02/2011	GMW-30	<0.5	<1	<1	<3	<10		
06/09/2011	GMW-30	<0.5	<1	<1	<3	<10		
09/27/2011	GMW-30	<0.5	<1	<1	<3	<10		
12/09/2011	GMW-30	1.16	<1	1.02	<3	<10		
11/18/2004	GMW-31	<2	<2	<2	<5	<5	<5	<5
12/14/2004	GMW-31	<2	<2	<2	<5	<5	<5	<5
01/18/2005	GMW-31	<2	<2	<2	<5	<5	<5	<5
02/28/2005	GMW-31	<2	<2	<2	<5	<5	<5	<5
03/16/2005	GMW-31	<2	<2	<2	<5	<5		
04/07/2005	GMW-31	<2	<2	<2	<5	<5		
05/24/2005	GMW-31	<2	<2	<2	<5	<5	<5	<5
06/20/2005	GMW-31	<2	<2	<2	<5	<5	<5	<5
12/22/2005	GMW-31	<2	<2	<2	<5	<5	<5	<5
04/12/2006	GMW-31	<2	<2	<2	<5	<5	<5	<5
12/21/2004	GMW-32	<2	<2	<2	<5	<5		
05/24/2005	GMW-32	<2	<2	<2	<5			
06/20/2005	GMW-32	<2	<2	<2	<5			
12/22/2005	GMW-32	<2	<2	<2	<5			
04/12/2006	GMW-32	<2	<2	<2	<5			
					<75			
05/16/2006	GMW-33	<20	8520	21100	92300	<50		
06/19/2006	GMW-33	<20	7790	21500	93900	<50		
07/17/2006	GMW-33	<30	4390	8960	43700	<50		
08/21/2006	GMW-33	<20	4320	11500	56400	<50		
09/18/2006	GMW-33	<20	6140	12800	62900	<50		
10/16/2006	GMW-33	<20	4170	12300	56000	<50		
11/13/2006	GMW-33	<20	4960	11600	57700	<50		
12/14/2006	GMW-33	<20	1950	6800	41900	<50		
01/15/2007	GMW-33	<20	3200	9170	48700	<50		
02/15/2007	GMW-33	<20	3510	10100	52400	<50		
03/06/2007	GMW-33	<20	3440	10200	50300	<50		
04/16/2007	GMW-33	<20	822	7100	37300	<50		IDNR sample
05/16/2007	GMW-33	<20	106	1800	9930	<50		
06/20/2007	GMW-33	<20	1310	5770	23400	<50		
07/16/2007	GMW-33	<20	1270	3080	14900	<50		
07/31/2007	GMW-33	7	683	2720	12800	<50		
07/31/2007	GMW-33	<100	990	3800	18000	<50		
08/01/2007	GMW-33	<20	855	2400	11500	<10		
08/07/2007	GMW-33	<20	1090	2390	12800	<10		
08/17/2007	GMW-33	<20	893	3160	14000	<100		
08/28/2007	GMW-33	<20	755	2290	13300	<100		
09/28/2007	GMW-33	9	550	1850	12400	<100		
10/22/2007	GMW-33	13	1320	3470	12600	<100		
11/19/2007	GMW-33	<20	748	2190	10400	<100		
12/14/2007	GMW-33	<2	146	584	2750	<10		
01/17/2008	GMW-33	<2	33	245	658	<10		
02/22/2008	GMW-33	<2	74	832	2300	<10		
03/24/2008	GMW-33	3	28	1100	1680	<10		
05/14/2008	GMW-33	<2	3	98	215	<10		
06/23/2008	GMW-33	<2	15	169	481	<10		
07/18/2008	GMW-33	<2	11	215	674	<10		
08/18/2008	GMW-33	<2	5	223	463			
09/19/2008	GMW-33	5	437	3230	13600			
10/27/2008	GMW-33	4	385	2380	10600			
11/20/2008	GMW-33	2	148	980	3670			
12/18/2008	GMW-33	<2	33	399	1190			
01/19/2009	GMW-33	<2	36	351	909			
03/11/2009	GMW-33	<1	4	51	167			
03/11/2009	GMW-33	<2	<2	5	22			
06/25/2009	GMW-33	<2	20	241	698	<5		
09/17/2009	GMW-33	<2	3	151	266	<5		
11/06/2009	GMW-33	1	4	196	337	<10		
03/18/2010	GMW-33	<0.5	4	2	<7.5	<10		
06/17/2010	GMW-33	<0.5	<1	2	4	<10		
10/05/2010	GMW-33	<0.195	<0.196	<0.211	<0.407	<0.722		
12/07/2010	GMW-33	<0.5	<1	<1	<3	<10		
03/02/2011	GMW-33	<0.5	<1	<1	<3	<10		
06/09/2011	GMW-33	<0.5	<1	<1	4	<10		
09/27/2011	GMW-33	<0.5	<1	<1	<3	<10		
12/09/2011	GMW-33	<0.5	<1	1.09	5.76	<10		
		Average		4211	20005			
05/16/2006	GMW-34	<2	<2	<2	<5	<5	<5	<5
06/19/2006	GMW-34	<2	<2	<2	<5	<5		
07/17/2006	GMW-34	<2	<2	<2	<5	<5		
08/21/2006	GMW-34	<2	<2	<2	<5	<5	<5	<5
09/18/2006	GMW-34	<2	<2	<2	<5	<5	<5	<5
11/13/2006	GMW-34	<2	<2	<2	<5	<5	<5	<5
11/19/2007	GMW-34	<2	<2	<2	<5	<5	<5	<5
11/20/2008	GMW-34	<2	<2	<2	<5	<5		

TABLE 1							
GROUNDWATER MONITORING DATA (ug/L)							
VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11							
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLENES	MEK	CH2CL2
Limits		5	1000	700	10000	400	
11/06/2009	GMW-34	<0.5	<1	<1	<4	<10	<5
10/05/2010	GMW-34	1	<0.196	192	928	<0.722	
11/05/2010	GMW-34	2	<1	258	1010	<10	
12/07/2010	GMW-34	10	<1	4340	12500	<10	
03/02/2011	GMW-34	3	<1	1350	3770	<10	
06/09/2011	GMW-34	<2.5	<5	406	1120	<50	
09/27/2011	GMW-34	<0.5	<1	<1	<3	<10	
12/09/2011	GMW-34	<0.5	<1	<1	<3	<10	
03/24/2004	MW-1	<2	<2	<2	<5	<5	
06/25/2004	MW-1	<2	<2	<2	<5	<5	
09/27/2004	MW-1	<2	<2	<2	<5	<5	<5
12/14/2004	MW-1	<2	<2	<2	<5	<5	<5
03/16/2005	MW-1	<2	<2	<2	<5	<10	
06/20/2005	MW-1	<2	<2	<2	<5	<10	
12/22/2005	MW-1	<2	<2	<2	<5	<10	
11/19/2007	MW-1	<2	<2	<2	<5	<10	<5
05/14/2008	MW-1	<2	<2	<2	<5	<10	<5
08/07/2008	MW-1	<2	<2	<2	<5		
08/27/2008	MW-1	<2	<2	<2	<5		
10/27/2008	MW-1	<2	<2	<2	<5		
11/20/2008	MW-1	<2	<2	<2	<5	<10	
05/12/2009	MW-1	<2	<2	<2	<3		
06/25/2009	MW-1	<2	<2	<2	<3	<5	
09/17/2009	MW-1	<2	<2	<2	<3	<5	
11/06/2009	MW-1	<0.5	<1	<1	<4	<5	
09/27/2011	MW-1	<0.5	<1	<1	<3	<10	
03/24/2004	MW-5	<2	<2	<2	<5	<5	
06/25/2004	MW-5	<2	<2	<2	<5	<5	
09/27/2004	MW-5	<2	<2	<2	<5	<5	
12/14/2004	MW-5	<2	<2	<2	<5	<5	
03/16/2005	MW-5	<2	<2	<2	<5	<5	
06/20/2005	MW-5	<2	<2	<2	<5		
12/22/2005	MW-5	<2	<2	<2	<5		
11/13/2006	MW-5	<2	<2	<2	<5	<10	<50
11/19/2007	MW-5	<2	<2	<2	<5	<50	<50
11/20/2008	MW-5	<2	<2	<2	<5	<50	<50
06/25/2009	MW-5	<2	<2	<2	<3	<50	<50
11/06/2009	MW-5	<0.5	<1	<1	<4	<50	<50
09/27/2011	MW-5	<0.5	<1	<1	<3	<10	
01/03/2001	TC-6D	5	19	2100	6110	<50	<50
03/27/2001	TC-6D	2	21	2840	7110	<50	<50
06/29/2001	TC-6D	24	95	8700	17300	<50	<50
10/17/2001	TC-6D	65	580	15200	45700	<50	<50
12/14/2001	TC-6D	<20	270	10900	28400	<50	<50
03/29/2002	TC-6D	<20	<20	9790	20500	<50	<50
06/27/2002	TC-6D	<20	102	9550	14800	<50	<50
09/26/2002	TC-6D	15	370	10100	25900	<50	<50
12/11/2002	TC-6D	<2	<2	230	483	<50	<50
03/26/2003	TC-6D	<20	116	1400	34300	<50	<50
06/12/2003	TC-6D	<20	180	11900	19800	<50	<50
08/15/2003	TC-6D	<20	127	6970	17900	<50	<50
12/02/2003	TC6D	<20	151	4870	11900	<50	<50
03/24/2004	TC6D	<20	<20	9820	15200	<50	<50
06/25/2004	TC6D	<2	<2	3960	4580	<50	
09/27/2004	TC6D	<2	<2	1010	1180	<50	
12/14/2004	TC6D	<2	<2	28	43	<50	
12/30/2004	TC6D	<2	<2	23	58	<50	
01/18/2005	TC6D	<2	<2	49	85	<50	
02/28/2005	TC6D	<2	31	4220	7730	<50	
03/16/2005	TC6D	<2	<2	7170	19800	<50	
04/07/2005	TC6D	13	19	6260	10700	<50	
05/24/2005	TC6D	<20	<20	7230	14100	<50	
06/20/2005	TC6D	<20	<20	8030	15600	<50	
08/12/2005	TC6D	<20	<20	11740	17990	<50	
09/29/2005	TC6D	<20	<20	11200	22500	<50	
10/24/2005	TC6D	<20	<20	12600	33300	<50	
12/22/2005	TC6D	<20	186	15300	46100	<50	
03/20/2006	TC6D	<20	186	10500	30300	<50	
06/19/2006	TC6D	<20	<20	14900	44200	<100	
09/18/2006	TC6D	<20	<20	9260	24800	<100	<5
11/13/2006	TC6D	<20	<20	9070	23800	<100	<5
03/06/2007	TC6D	<20	<20	5670	12600	<10	<5
06/20/2007	TC6D	<20	<20	5320	12500	<10	<5
11/19/2007	TC6D	<20	82	6620	24100	<5	<5
03/24/2008	TC6D	<20	26	8630	28100	<5	<5
06/23/2008	TC6D	<20	426	8880	31300	<5	<5
09-19-08	TC6D	15	240	10200	41400		
11/20/2008	TC6D	14	335	8850	35000	<5	
03/11/2009	TC6D	<25	860	16450	65770	<5	
06/25/2009	TC6D	18	292	11800	32100		
09/17/2009	TC6D	17	186	14700	56500		
11/05/2009	TC6D	18	131	18700	75200	<100	
03/18/2010	TC6D	16	26	17700	60900	<10	
06/17/2010	TC6D	<50	<100	16900	58400	<1000	
10/05/2010	TC6D	<50	<100	22300	79800	<72.2	
12/07/2010	TC6D	17	63	19200	74100	<100	
03/02/2011	TC6D	<50	<100	17100	67300	<1000	
06/09/2011	TC6D	<50	<100	16800	61800	<1000	
09/27/2011	TC6D	<50	<100	13500	54200	<1000	
12/09/2011	TC6D	<50	<100	16200	55000	<1000	
				9656	29575		

TABLE 1								
GROUNDWATER MONITORING DATA (ug/L)								
VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLENES	MEK	CH2CL2	1,2-DCP
Limits		5	1000	700	10000	400		
06/27/2002	TC-6S	<2	<2	<2	24	<5	<5	<5
09/26/2002	TC-6S	<2	<2	<2	<5	<5		
12/1/2002	TC-6S	<2	<2	<2	<5	<5		
03/26/2003	TC-6S	<2	<2	<2	<5	<5	<5	
06/1/2003	TC-6S	<2	<2	<2	<5	<5	<5	
08/15/2003	TC-6S	<2	<2	<2	<5	<5	<5	
12/02/2003	TC-6S	<2	<2	<2	<5	<5	<5	
03/24/2004	TC-6S	<2	<2	<2	<5	<5		
06/25/2004	TC-6S	<2	<2	<2	<5			
09/27/2004	TC-6S	<2	<2	<2	<5			
12/14/2004	TC-6S	<2	<2	<2	<5			
03/16/2005	TC-6S	<2	<2	<2	<5	<5		
06/20/2005	TC-6S	<2	<2	<2	<5			
12/22/2005	TC-6S	<2	<2	<2	<5	<5		
11/13/2006	TC-6S	<2	<2	<2	<5	<5		
11/19/2007	TC-6S	<2	<2	<2	<5	<5		
11/20/2008	TC-6S	<2	<2	<2	<5			
11/20/2008	TC-6S	<0.5	<1	<1	<4	<10		
10/05/2010	TC-6S	<0.195	<0.196	<0.211	1	<0.722		
09/27/2011	TC-6S	<0.5	<1	<1	<3	<10		
03/24/2004	TC-7	<2	<2	<2	<5	<5		
06/25/2004	TC-7	<2	<2	<2	<5	<5		
09/27/2004	TC-7	<2	<2	<2	<5	<5		
12/14/2004	TC-7	<2	<2	<2	<5	<5		
03/16/2005	TC-7	<2	<2	<2	<5	<5		
06/20/2005	TC-7	<2	<2	<2	<5			
12/22/2005	TC-7	<2	<2	<2	<5	<5		
11/13/2006	TC-7	<2	<2	<2	<5	<5		
11/19/2007	TC-7	<2	<2	<2	<5	<5		
11/20/2008	TC-7	<2	<2	<2	<5	<5		
11/06/2009	TC-7	<0.5	<1	<1	<4	<10		
11/06/2009	TC-7	<5	<5	<5	<5		IDNR Split Sample	
10/05/2010	TC-7	<0.195	<0.196	<0.211	<0.407	<0.722		
09/27/2011	TC-7	1.75	49	166	172	<10		
03/29/2002	TC-17S	<2	<2		<5	<5		
06/27/2002	TC-17S	<2	<2	<2	10	<5		
09/26/2002	TC-17S	<2	<2	<2	<5	<5		
12/1/2002	TC-17S	<2	<2	<2	<5	<5		
03/26/2003	TC-17S	<2	<2	<2	<5			
06/12/2003	TC-17S	<2	<2	<2	<5	<5		
08/15/2003	TC-17S	<2	<2	<2	<5	<5		
05/16/2007	TC-17S	<2	<2	<2	<5	<5		
07/16/2007	TC-17S	<2	<2	<2	<5	<5		
03/24/2004	TC22D	<2	<2	<2	<2	<5		
06/25/2004	TC22D	<2	<2	<2	<2	<5		
09/27/2004	TC22D	<2	<2	<2	<2	<5		
12/14/2004	TC22D	<2	<2	<2	<2	<5		
03/16/2005	TC22D	<2	<2	<2	<2	<10		
06/20/2005	TC22D	<2	<2	<2	<2			
12/22/2005	TC22D	<2	<2	<2	<2	<5		
11/13/2006	TC22D	<2	<2	<2	<2			
06/20/2007	TC22D	<2	<2	<2	<2	<5		
11/20/2008	TC22D	<2	<2	6	46	<5		
10/05/2010	TC22D	<0.195	<0.196	<0.211	<0.407	<0.722		
11/19/2007	TC22S	<2	<2	<2	<2	<5		
11/06/2009	TC22S	<0.5	<1	<1	<4	<10		
09/27/2011	TC22S	<0.5	<1	<1	<3	<10		
05/15/1986	TC-23	<1	<1	<1	<5	<5		
08/20/1986	TC-23	<1	<1	<1	3	<15		
11/25/1986	TC-23	<1	<1	<1	<1	<15		
02/17/1987	TC-23	<1	<1	<1	<1	<20		
06/15/1987	TC-23	12	<1	<1	<1	<15		
09/02/1987	TC-23	<5	<1	<1	<1	<15		
12/17/1987	TC-23	<1	<1	<1	<1	<15		
04/07/1988	TC-23	<1	<1	<1	<1	<20		
07/19/1988	TC-23	<1	<1	<1	<1	<15		
10/12/1988	TC-23	<1	<1	<1	<1	<15		
01/18/1989	TC-23	<1	<1	<1	<1	<15		
04/12/1989	TC-23	<1	<1	<1	<1	<15		
07/24/1989	TC-23	<2	<2	<2	<5	<15		
10/17/1989	TC-23	<2	<2	<2	<5	<3		
01/01/1990	TC-23	<2	<2	<2	<5	10		
07/31/1990	TC-23	<2	<2	<2	<5	<5		
07/24/1991	TC-23	<2	<2	<2	<5	<3		
11/12/1991	TC-23	<2	<2	<2	<5	<3		
03/24/1992	TC-23	<1	<1	<1	<1	<5		
03/26/1992	TC-23	<1	<1	<1	<1	<5		
08/18/1992	TC-23	<5	<5	<5	<10	<5		
12/30/1992	TC-23	<1	<1	<1	<1	<5		
03/30/1993	TC-23	6	<1	<1	<1	<5		
06/08/1993	TC-23	<5	<5	<5	<10	<5		
03/23/1994	TC-23	<2	<2	<2	<5	<5		
06/29/1994	TC-23	<2	<2	<2	<5	<5		
09/27/1994	TC-23	<2	<2	<2	<5	<5		
11/23/1994	TC-23	<2	<2	<2	<5	<5		
02/24/1995	TC-23	<2	<2	<2	<5	<5		
06/29/1995	TC-23	<2	<2	<2	<5	<5		
09/27/1995	TC-23	<2	<2	<2	<5	<5		
12/04/1995	TC-23	<2	<2	<2	<5	<5		
02/28/1996	TC-23	<2	<2	<2	<5	<5		

TABLE 1								
GROUNDWATER MONITORING DATA (ug/L)								
VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLNES	MEK	CH2CL2	1,2-DCP
Limits		5	1000	700	10000	400		
07/02/1996	TC-23	<2	<2	<2	<5	<5		
09/30/1996	TC-23	<2	<2	<2	<5	<5		
03/26/1997	TC-23	<2	<2	<2	<5	<5		
06/17/1997	TC-23	<2	<2	<2	<5	<5		
08/28/1997	TC-23	<2	<2	<2	<5	<5		
11/12/1997	TC-23	<2	<2	2	<5	<5	<5	<5
03/20/1998	TC-23	<2	<2	<2	<5	<5	<5	<5
06/17/1998	TC-23	<2	<2	<2	<5	<5	<5	<5
09/17/1998	TC-23	<2	<2	<2	<5	<5	<5	<5
12/15/1998	TC-23	<2	<2	<2	<5	<5	<5	<5
03/26/1999	TC-23	<2	<2	<2	<5	<5	<5	<5
06/23/1999	TC-23	<2	<2	<2	<5	<5	<5	<5
09/29/1999	TC-23	<2	<2	<2	<5	<5	<5	<5
12/23/1999	TC-23	<2	<2	6	10	<5	<5	<5
03/29/2000	TC-23	<2	<2	<2	<5	<5	<5	<5
07/21/2000	TC-23	<2	<2	<2	<5	<5	<5	<5
01/03/2001	TC-23	<2	<2	<2	<5	<5	<5	
03/27/2001	TC-23	<2	<2	<2	<5	<5		
06/29/2001	TC-23	<2	<2	<2	<5	<5	<5	
10/04/2001	TC-23	<2	<2	<2	<5	<5		
12/14/2001	TC-23	<2	<2	<2	<5	<5		
03/29/2002	TC-23	<2	<2	<2	<5	<5		
06/27/2002	TC-23	<2	<2	<2	<5	<5		
09/26/2002	TC-23	<2	<2	<2	<5	<5		
12/11/2002	TC-23	<2	<2	<2	<5	<5		
03/26/2003	TC-23	<2	<2	<2	<5	<5		
06/12/2003	TC-23	<2	<2	<2	<5	<5		
08/14/2003	TC-23	<2	<2	<2	<5	<5		
12/02/2003	TC-23	<2	<2	<2	<5	<5		
03/24/2004	TC-23	<2	<2	<2	<5	<5		
06/25/2004	TC-23	<2	<2	<2	<5	<5		
09/27/2004	TC-23	<2	<2	<2	<5	<5		
12/14/2004	TC-23	<2	<2	<2	<5	<5		
03/16/2005	TC-23	<2	<2	<2	<5	<5		
06/20/2005	TC-23	<2	<2	<2	<5	<5		
12/22/2005	TC-23	<2	<2	<2	<5	<5		
11/23/2006	TC-23	<2	<2	5	24			
11/19/2007	TC-23	<2	<2	<2	6			
11/20/2008	TC-23	<2	<2	46	252			
11/06/2009	TC-23	<0.5	<1	<1	<4	<10		
10/05/2010	TC-23	<0.195	<0.196	<0.211	<0.407	<0.722		
09/27/2011	TC-23	<0.5	<1	<1	<3	<10		
06/18/1992	RW-102	8	3380	1190	10100	530		
10/13/1992	RW-102	72	13100	21800	81800	510		
12/30/1992	RW-102	8	1190	3380	10100	1100		
03/30/1993	RW-102	26	2410	4940	17200	390		
09/30/1993	RW-102	20	9820	4200	20500	460		
03/23/1994	RW-102	<2	3130	1580	9730	920		
09/27/1994	RW-102	22	8530	4440	21900	2450		
11/23/1994	RW-102	12	4640	2320	19200	270		
06/29/1995	RW-102	<40	2780	1440	8950	520		
09/27/1995	RW-102	11	8990	3980	21600	170		
12/04/1995	RW-102	39	16200	31	39200	470		
02/28/1996	RW-102	<20	1290	3930	16300	370		
07/02/1996	RW-102	13	2180	4360	15500	<50		
09/30/1996	RW-102	32	5910	14700	38600	<10		
06/22/1998	RW-102	19	8180	11200	43400	<10		
09/17/1998	RW-102	27	4750	12500	51300	<10		
06/29/1999	RW-102	11	9690	7160	28900	<10		
08/14/2003	RW-102	<20	1020	3290	13400	<10		
05/23/2008	RW-102	11	1220	4630	19300	25		
05/26/2008	RW-102	<20	1110	4200	17200	<10		
07/11/2008	RW-102	<2	2240	7040	28600			
09/07/2008	RW-102	<2	1820	5840	20900			
08/27/2008	RW-102	<20	3590	7940	31900			
09/19/2008	RW-102	<2	3130	9190	35600			
10/27/2008	RW-102	10	2930	7170	31100			
05/12/2009	RW-102	9	1440	9390	35000	<3		
06/25/2009	RW-102	12	2490	8210	25400	<15		
09/17/2009	RW-102	10	2160	6770	22800	27		
	Average	4619	6315	26267				
					<2			
06/18/1992	RW-104	<1	9	4	5760	<2		
12/30/1992	RW-104	6	333	1250	4300	<5		
03/30/1993	RW-104	10	490	1660	5750	<2		
09/30/1993	RW-104	8	540	150	1190	<2		
03/23/1994	RW-104	10	460	40	1490	<5		
09/27/1994	RW-104	<2	31	<2	63	<5		
11/23/1994	RW-104	2	200	28	640	<2	IDNR sample	
06/29/1995	RW-104	14	930	180	3070	<5		
09/27/1995	RW-104	7	3	<2	12	72		
12/04/1995	RW-104	5	3	<2	7	9		
02/28/1996	RW-104	4	170	610	2110	<5		
07/02/1996	RW-104	3	70	270	937	<50		
09/30/1996	RW-104	3	40	250	760	<50		
06/22/1998	RW-104	15	1210	5160	19200	<50		
09/17/1998	RW-104	11	1430	6290	15400	<50		
06/29/1999	RW-104	3	140	770	2680	<50		
08/01/2003	RW-104+5	17	540	5810	12800	<50		
08/07/2003	RW-104+5	6	270	3690	12500	<50		
08/14/2003	RW-104	7	338	4260	14010	<50		
06/20/2007	RW-104	<20	197	8870	29300	<50		
06/21/2007	RW-104	<20	168	2150	9490	<50		
07/31/2007	RW-104	14	497	6490	21500	<50		

TABLE 1 GROUNDWATER MONITORING DATA (ug/L) VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLENES	MEK	CH2CL2	1,2-DCP
Limits		5	1000	700	10000	400		
07/31/2007	RW-104	<100	740	6500	27000	<100		
08/01/2007	RW-104	<20	725	6070	20200	<100		
08/07/2007	RW-104	<20	639	6420	23700	<100		
08/17/2007	RW-104	18	424	8600	33500	<100		
08/28/2007	RW-104	<20	711	9040	30000	<100		
09/28/2007	RW-104	<20	484	4280	17000	<10		
10/22/2007	RW-104	<20	502	8200	32700	<10		
05/14/2008	RW-104	<20	136	9800	37200			
07/1/2008	RW-104	<2	1150	11700	45100			
08/27/2008	RW-104	<20	471	5250	20100			
09/19/2009	RW-104	15	586	7840	29000			
10/27/2008	RW-104	15	542	7010	27900			
05/12/2009	RW-104	17	455	15500	48700			
06/25/2009	RW-104	<40	1030	10300	28700			
09/17/2009	RW-104	19	1030	9890	29200			
	Average		478	5186	16567			
CREEK SAMPLES								
11/06/2009	UP STREAM	<0.500	<1	<1	<4	<10		
01/13/2011	UP STREAM	<0.500	<1	<1	<3	<10		
11/06/2009	ON SITE	<0.500	<1	<1	<4	<10		
01/13/2011	ON SITE	<0.500	<1	1	<3	<10		
11/06/2009	DOWN STREAM	<0.500	<1	<1	<4	<10		
01/13/2011	DOWN STREAM	<0.500	<1	<1	<3	<10		
PHYTO REMEDIATION SYSTEM MONITORING WELL LOCATIONS								
04/16/2007	MP-1	<2	220	1280	15900	<5		
07/31/2007	MP-1	10	5920	38400	15900	<100		
08/01/2007	MP-1	<2	737	3870	28400	<10		
08/07/2007	MP-1	<2	2	12	250	<10		
08/17/2007	MP-1	<2	6	75	734			
08/28/2007	MP-1	<2	16	27	871			
11/19/2007	MP-1	3	202	2150	12000			
05/14/2008	MP-1	<2	<2	15	280			
10/27/2008	MP-1	<2	4	90	350	<5		
05/12/2009	MP-1	<2	22	1150	3880	<5		
07/08/2009	MP-1	<2	<2	48	209	<5		
09/17/2009	MP-1	6	474	4140	13600	<5		
				634	4271	7698	<5	
04/16/2007	MP-3	<2	74	194	811	<5		
07/31/2007	MP-3	<2	<2	335	527	<5		
08/01/2007	MP-3	<2	5	294	713	<10		
08/07/2007	MP-3	<2	<2	14	88	<10		
08/17/2007	MP-3	<2	<2	3	9			
08/28/2007	MP-3	<2	<2	<2	<2			
11/19/2007	MP-3	<2	<2	692	841			
05/14/2008	MP-3	<2	<2	271	715			
10/27/2008	MP-3	<2	<2	428	849	<5		
05/12/2009	MP-3	<2	<2	91	168	<5		
07/08/2009	MP-3	<2	<2	244	493	<5		
09/17/2009	MP-3	<2	13	476	1290	<5		
				254	542			
05/16/2007	P-1	<2	22	216	753	<5		
06/01/2007	P-1	<2	<2	<2	45	<5		
07/16/2007	P-1	<2	<2	62	169	<5		
07/31/2007	P-1	<2	<2	468	562	<10		
08/01/2007	P-1	<2	<2	292	403	<10		
08/07/2007	P-1	<2	<2	<2	58	<10		
08/17/2007	P-1	<2	<2	<2	24	<10		
08/28/2007	P-1	<2	<2	<2	<5	<10		
11/19/2007	P-1	<2	<2	47	13			
05/14/2008	P-1	<2	<2	19	6			
07/11/2008	P-1	<2	<2	26	<5			
08/27/2008	P-1	<2	<2	25	<5			
10/27/2008	P-1	<2	<2	<2	7	<5		
05/12/2009	P-1	<2	<2	<2	<3	<5		
07/08/2009	P-1	<2	<2	<2	<3	<5		
09/17/2009	P-1	<2	<2	<2	<3	<5		
						<5		
07/16/2007	P-2	<2	<2	<2	<5	<5		
07/31/2007	P-2	<2	<2	<2	<5	<5		
08/01/2007	P-2	<2	<2	<2	<5	<10		
08/07/2007	P-2	<2	<2	<2	<5	<10		
08/17/2007	P-2	<2	<2	<2	<5	<10		
08/28/2007	P-2	<2	<2	<2	<5	<10		
11/19/2007	P-2	<2	<2	<2	<5			
05/14/2008	P-2	<2	<2	<2	<5			
07/11/2008	P-2	<2	<2	<2	<5			
08/27/2008	P-2	<2	<2	<2	<5			
10/27/2008	P-2	<2	<2	<2	<5	<10		
05/12/2009	P-2	<2	<2	<2	<3	<10		
07/08/2009	P-2	<2	<2	<2	<3	<10		
09/17/2009	P-2	<2	<2	<2	<3	<10		
06/23/2008	P-3	<2	2	35	228			
07/11/2008	P-3	<2	2	8	34			
08/07/2008	P-3	<2	<2	17	33			
08/27/2008	P-3	<2	<2	7	35			
10/27/2008	P-3	<2	<2	9	11	<10		

TABLE 1							
GROUNDWATER MONITORING DATA (ug/L)							
VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11							
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLENES	MEK	CH2CL2
Limits		5	1000	700	10000	400	
05/12/2009	P-3	<2	<2	72	68	<10	
07/08/2009	P-3	<2	<2	2	4	<10	
09/17/2009	P-3	<2	<2	<2	4	<10	
06/23/2008	P-4	<2	<2	<2	7		
07/11/2008	P-4	<2	<2	<2	<5		
08/07/2008	P-4	<2	<2	<2	<5		
08/27/2008	P-4	<2	<2	<2	<5	<10	
10/27/2008	P-4	<2	<2	<2	<5	<10	
05/12/2009	P-4	<2	<2	<2	7	<10	
07/08/2009	P-4	<2	<2	<2	<3	<10	
09/17/2009	P-4	<2	<2	<2	<3	<10	
06/23/2008	P-5	<2	<2	<2	<5		
07/11/2008	P-5	2	<2	<2	<5		
08/07/2008	P-5	<2	<2	<2	<5		
08/27/2008	P-5	2	<2	<2	<5		
10/27/2008	P-5	<2	3	<2	10	<10	
05/12/2009	P-5	<2	<2	<2	7	<10	
07/08/2009	P-5	<2	<2	<2	<3	<10	
09/17/2009	P-5	3	<2	2	12		
06/23/2008	P-6	<2	<2	<2	<5		
07/11/2008	P-6	<2	<2	<2	<5		
08/07/2008	P-6	<2	<2	<2	<5		
08/27/2008	P-6	<2	<2	<2	<5		
10/27/2008	P-6	<2	<2	<2	<5		
05/12/2009	P-6	<2	<2	<2	5	<10	
07/08/2009	P-6	<2	<2	<2	<3	<10	
09/17/2009	P-6	<2	8	27	126	<10	
04/16/2007	L-1	50	10600	23300	94400	<50	
05/16/2007	L-1	<20	8090	18100	76900	<50	
07/16/2007	L-1	<20	7590	15200	69000	<100	
11/19/2007	L-1	34	5430	10200	50800	<100	
04/16/2007	U-1	35	8150	22200	84000		
05/16/2007	U-1	<20	7150	18300	71400		
07/16/2007	U-1	<20	5920	14800	62300	<5	
08/28/2007	U-1	<20	5160	16200	61500		
11/19/2007	U-1	22	4270	10200	46100		
05/14/2008	U-1	28	6740	15500	67100		
10/27/2008	U-1	29	5200	11200	51600	<5	
05/12/2009	U-1	33	6640	15300	54000		
07/08/2009	U-1	27	5440	15200	60800	<5	
09/17/2009	U-1	35	1290	1860	8970	<5	
04/16/2007	L-5	<2	50	559	2820	<10	
04/16/2007	U-5	<2	505	1570	7120		
04/16/2007	U-7	<2	398	1070	5530	<5	
08/28/2007	U-7	<2	139	290	2150		
11/19/07	U-7	<2	37	114	426		
05/14/2008	U-7	2	390	1110	5220		
10/27/2008	U-7	<2	183	366	2140		
05/12/2009	U-7	3	623	1950	10600	<10	
07/08/2009	U-7	<20	146	369	1980		
09/17/2009	U-7	<2	<2	9	48	<10	
04/16/2007	L-8	<2	388	1070	5770		
11/19/2007	L-8	dry				<10	
08/07/2008	U-11	<2	437	6710	35600		
08/27/2008	U-11	Dry				<10	
10/27/2008	U-11	<2	5	4	311	<10	
05/12/2009	U-11	<2	199	4970	24600	<10	
07/08/2009	U-11	<2	106	251	1080		
05/14/2008	U-13	<2	26	1230	2250	<10	
08/07/2008	U-15	<2	141	3920	12000		IDNR sample
08/27/2008	U-15	<2	151	3940	12300		
10/27/2008	U-15	<2	31	2750	9300	<10	
05/12/2009	U-15	<2	11	967	2650	<10	
07/08/2009	U-15	<2	6	52	233	<10	
09/17/2009	U-15	2	53	3640	9720		DNR
05/14/2008	U-17	<2	<2	140	369	<5	
08/07/2008	U-19	<2	<2	16	63		
08/27/2008	U-19	<2	<2	16	59	<5	
10/27/2008	U-19	<2	<2	<2	<5	<5	
05/12/2009	U-19	<2	<2	<2	5	<5	
07/08/2009	U-19	<2	16	12	392	<5	
09/17/2009	U-19	<2	<2	<2	7	<10	
07/31/2007	RW-104 Irr.	<2	8	98	276	<10	
07/31/2007	RW-104 Irr.	<2	9	94	330	<10	
08/07/2007	RW-104 Irr.	5	214	1900	7680	<10	
08/17/2007	RW-104 Irr.	<2	90	725	3570		
08/28/2007	RW-104 Irr.	<2	<2	13	51		
09/17/2007	RW-104 Irr.	<2	33	376	1740		
07/11/2008	RW-104 Irr.	<2	14	53	208		
08/27/2008	RW-104 Irr.	<2	12	171	375		

TABLE 1 GROUNDWATER MONITORING DATA (ug/L)								
VOGEL QUARTERLY & MONTHLY MONITORING THROUGH 12/09/11								
DATE	WELL #	BENZENE	TOLUENE	E-BENZENE	XYLENES	MEK	CH2CL2	1,2-DCP
Limits		5	1000	700	10000	400		
08/27/2008	RW-104 Irr.	<4	12	190	480			
09-19-08	RW 104 Irr.	<2	3	25	115	<10		
06/25/2009	RW-104 Irr.	<2	33	329	1010	<10		
09/17/2009	RW-104 Irr.	<2	18	169	642	<10		
	Average		41	345	1373			
06/26/2008	RW-102 Irr.	<2	7	30	102			
07/11/2008	RW-102 Irr.	<2	9	95	380			
08/07/2008	RW 102 Irr.	<2	109	368	1280			
08/27/2008	RW-102 Irr.	<2	40	140	535	<5		
09-19-08	RW-102 Irr.	<2	86	230	930	<5		
06/25/2009	RW-102 Irr.	<2	47	165	617	<5		
09/17/2009	RW 102 Irr.	<2	32	123	487	<5		
			47	164	619			
QA/QC DUPLICATE SAMPLES								
06/25/2004	Trip Blank	<2	<2	<2	<5	<5		
09/27/2004	Trip Blank	<2	<2	<2	<5	<5		
12/14/2004	Trip Blank	<2	<2	<2	<5	<5		
03/16/2005	Trip Blank	<2	<2	<2	<5	<5		
05/24/2005	Trip Blank	<2	<2	<2	<5	<5		
06/20/2005	Trip Blank	<2	<2	<2	<5	<5		
08/30/2005	Trip Blank	<2	<2	<2	<5	<5		
09/29/2005	Trip Blank	<2	<2	<2	<5	<5		
10/24/2005	Trip Blank	<2	<2	<2	<5	<5		
12/02/2005	Trip Blank	<2	<2	<2	<5	<5		
12/22/2005	Trip Blank	<2	<2	<2	<5			
11/13/2006	Trip Blank	<2	<2	<2	<5			
03/06/2007	Trip Blank	<2	<2	<2	<5			
06/20/2007	Trip Blank	<2	<2	<2	<5			
11/19/2007	Trip Blank	<2	<2	<2	<5	<5		
03/24/2008	Trip Blank	<2	<2	<2	<5	<5		
06/23/2008	Trip Blank	<2	<2	<2	<5	<5		
09/17/2009	Trip Blank	<2	<2	<2	<5	<5		
11/06/2009	Trip Blank	<2	<2	<2	<5	<5		
11/06/2009	Trip Blank	<0.500	<1	<1	<4	<10		
03/24/2004	Split Sample	<2	<2	83	90	<5		
03/24/2004	GMW-19	<2	<2	104	120	<5		
06/25/2004	Split Sample	<2	<2	275	622	<5		
06/25/2004	GMW-15	<2	<2	294	673	<5		
09/27/2004	Split Sample	<2	<2	<2	<5	<5		
09/27/2004	GMW 7R	<2	<2	<2	<5	<5		
12/14/2004	Split Sample	7	61	4060	13700	<5		
12/14/2004	GMW-21	<2	<2	2380	12600	<5		
03/16/2005	Split Sample	<2	<2	53	52	<5		
03/16/2005	GMW-27	<2	<2	61	89	<5		
05/24/2005	Split Sample	<2	<2	1700	5180	<5		
05/24/2005	GMW-21	<2	24	1890	4900	<5		
06/20/2005	Split Sample	<2	<2	645	1640	<5		
06/20/2005	GMW 21	<2	<2	1020	3310	<50		
12/22/2005	Split Sample	<2	<2	1770	5340	<50		
12/22/2005	GMW-7R	<2	<2	1530	4610	<5		
03/20/2006	Split Sample	<2	<2	1280	2640			
03/20/2006	GMW-21	<2	<2	1020	2190	<50		
06/19/2006	Split Sample	<2	<2	20	56	<50		
06/19/2006	GMW-20	<2	<2	8	17	<5		
09/18/2006	Split Sample	<20	<20	8710	23800	<5		
09/18/2006	TC-6D	<20	<20	9260	24800	<100		
11/13/2006	Split Sample	<2	<2	594	1330	<100		
11/13/2006	GMW-20	<2	<2	493	1040	<100		
03/06/2007	Split Sample	<20	2360	6430	20000	<100		
03/06/2007	GMW-9R	<20	2910	6250	19300	<10		
06/20/2007	Split Sample	<2	<2	486	1260	<10		
06/20/2007	GMW-20	<2	<2	398	900	<10		
11/19/2007	Split Sample	<20	235	2040	11400	<10		
11/19/2007	MP-1	3	202	2150	12000			
03/24/2008	Split Sample	<20	1740	6610	23100			
03/24/2008	GMW-9R	21	1810	6620	23200			
06/23/2008	Split Sample	4	<2	1910	6200			
06/23/2008	GMW-7R	3	2	1800	5720			
11/20/2008	Split Sample	<2	<2	107	381			
11/20/2008	GMW-20	<2	<2	324	801			
09/17/2009	Split Sample	895	2750	4370	20500			
09/17/2009	GMW-9R	16	4150	12200	43600			
11/06/2009	Split Sample	6	44	6770	22900	<100		
11/06/2009	GMW-16	5	37	5940	20200	<10		
10/05/2010	Split Sample	<19.5	<19.6	20600	74800	<72.2		
10/05/2010	TC6D	<50	<100	22300	79800	<72.2		

TABLE 2 HEAVY METALS GROUNDWATER DATA FROM VOGEL SITE in mg/l							
DATE	WELL #	ARSENIC	CADMIUM	CHROMIUM	LEAD	MERCURY	NOTE
IDNR	MCL	0.01000	0.00500	0.10000	0.01500	0.00200	
IDNR	NPG	0.05000	0.02500	0.50000	0.07500	0.01000	
06/29/2000	B-2	0.00000	0.00000	0.00000	0.00400	0.00260	Center of metals area*
12/23/1999	GMW-3	0.01300	0.00170	0.03000	0.05300	0.00000	NE of exc.
12/23/1999	GMW-4	0.01000	0.00050	0.02000	0.02400	0.00000	W of exc.
11/06/2009	GMW-7R	0.00000	0.00000	0.00000	0.00000	0.00000	field filtered
10/06/2010	GMW-7R	0.00604	0.00000	0.00000	0.00000	0.00000	field filtered
09/27/2011	GMW-7R	0.00513	0.00000	0.00000	0.00000	0.00000	field filtered
12/22/2005	GMW-9R	0.09100	0.00200	0.07000	0.06000	0.00070	
11/13/2006	GMW-9R	0.01000	0.00000	0.01000	0.00000	0.00000	
11/19/2007	GMW-9R	0.05000	0.00200	0.06000	0.04000	0.00000	
12/18/2008	GMW-9R	0.02000	0.00000	0.00000	0.00000	0.00000	
11/06/2009	GMW-9R	0.00000	0.00000	0.00000	0.00000	0.00000	field filtered
10/05/2010	GMW-9R	0.00898	0.00000	0.00000	0.00000	0.00000	field filtered
09/27/2011	GMW-9R	0.02480	0.00000	0.00000	0.00000	0.00000	field filtered
Average		0.02925	0.00057	0.02000	0.01429	0.00010	
12/23/1999	GMW-12	0.00500	0.00000	0.00000	0.00200	0.00000	200' S of RW-102
03/29/2002	GMW-13	0.00000	0.00000	0.16000		0.00920	center of metals area
06/27/2002	GMW-13	0.00000	0.00000	0.01000	0.02000	0.10500	
09/26/2002	GMW-13	0.00000	0.00000	0.04000	0.05000	0.01000	
12/11/2002	GMW-13	0.01000	0.00400	0.06000	0.08000	0.01000	
03/26/2003	GMW-13	0.00000	0.00200	0.07000	0.09000	0.01000	
06/12/2003	GMW-13	0.00000	0.00200	0.06000	0.09000	0.00900	
08/29/2003	GMW-13	0.00000	0.00100	0.03000	0.04000	0.00700	
12/02/2003	GMW-13	0.00000	0.00000	0.00000	0.05000	0.02000	
03/24/2004	GMW-13	0.00000	0.00100	0.04000	0.06000	0.04000	
06/25/2004	GMW-13	0.00000	0.00000	0.02000	0.03000	0.03000	
09/27/2004	GMW-13	0.00000	0.00000	0.02000	0.01000	0.03000	
12/14/2004	GMW-13	0.00000	0.00100	0.02000	0.05000	0.04000	
03/18/2005	GMW-13	0.01000	0.00200	0.04000	0.07000	0.03000	
6/20/05	GMW-13	0.00900	0.00200	0.01000	0.05000	0.39000	
12/22/2005	GMW-13	0.00500	0.00100	0.01000	0.01000	0.00020	
Average		0.00227	0.00000	0.03933	0.05000	0.04936	
03/29/2002	GMW-14	0.00000	0.00600	0.16000	0.09000	0.01970	S edge of metals area
06/27/2002	GMW-14	0.02000	0.00000	0.04000	0.01000	0.00620	
09/26/2002	GMW-14	0.03000	0.00200	0.08000	0.03000	0.03800	
12/11/2002	GMW-14	0.02000	0.00300	0.07000	0.02000	0.02000	
03/26/2003	GMW-14	0.03000	0.00400	0.11000	0.05000	0.03000	
06/12/2003	GMW-14	0.00000	0.00000	0.01000	0.00000	0.01000	
08/29/2003	GMW-14	0.00000	0.00100	0.04000	0.00000	0.00700	
06/25/2004	GMW-14	0.00000	0.00000	0.02000	0.00000	0.00900	
Average		0.01250	0.00200	0.06625	0.02500	0.01749	
11/06/2009	GMW-15	0.00000	0.00000	0.00000	0.00000	0.00000	field filtered
11/06/2009	GMW-15	0.00800	<0.001	<0.01	<0.001	<0.00005	IDNR Split Sample
10/08/2010	GMW-15	0.02120	<0.0005	0.00205	<0.0004	<0.0002	field filtered
09/27/2011	GMW-15	0.01710	<0.0005	<0.0020	<0.0040	<0.0002	field filtered
12/23/1999	MW-1	0.00000	0.00000	0.00000	0.00200	0.00000	W of exc.
12/11/2002	MW-1	0.00000	0.00000	0.00000	0.00000	0.00000	
03/26/2003	MW-1	0.00000	0.00000	0.00000	0.00000	0.00000	
06/12/2003	MW-1	0.00000	0.00000	0.00000	0.00000	0.00000	
08/29/2003	MW-1	0.00000	0.00000	0.00000	0.00000	0.00000	
12/02/2003	MW-1	0.00000	0.00000	0.00000	0.00000	0.00000	
03/24/2004	MW-1	0.00000	0.00000	0.00000	0.00000	0.00000	
06/25/2004	MW-1	0.00000	0.00000	0.00000	0.00000	0.00000	
09/27/2004	MW-1	0.00000	0.00000	0.00000	0.00000	0.00000	

TABLE 3

HEAVY METALS CREEK DATA FROM VOGEL SITE in mg/l

TABLE 3

HEAVY METALS CREEK DATA FROM VOGEL SITE in mg/l

DATE	WELL #	ARSENIC	CADMIUM	CHROMIUM	LEAD	MERCURY	NOTE
IDNR	SWQS*	0.15000	0.00045	0.01100	0.00770	0.00090	
Creek Samples							
11/06/09	Up Stream	<0.01	<0.001	<0.01	<0.01	<0.001	
01/13/11	Up Stream	0.00142	<0.0005	0.00231	<0.0040	<0.0002	
02/16/11	Up Stream	0.00337	<0.0005	<0.0020	<0.0040	0.00106	
09/27/11	Up Stream	0.00132	<0.0005	<0.0020	<0.0040	<0.0002	
11/06/09	On Site	<0.001	<0.01	<0.001	<0.001	<0.00005	IDNR Split Sample
11/06/09	On Site	<0.01	<0.001	<0.01	<0.01	<0.001	
01/13/11	On Site	0.01730	0.00295	0.02230	0.02760	0.00020	
02/16/11	On Site	0.00302	<0.0005	<0.0020	<0.0040	0.00163	
09/27/11	On Site	0.00123	<0.0005	<0.0020	<0.0040	<0.0002	
11/06/09	Down Stream	<0.01	<0.001	<0.01	<0.01	<0.001	
01/13/11	Down Stream	<0.00100	<0.0005	<0.00200	<0.00400	<0.00020	
02/16/11	Down Stream	0.00377	<0.0005	0.00225	<0.0040	0.00182	
09/27/11	Down Stream	0.00152	<0.0005	<0.0020	<0.0040	<0.0002	

* Iowa Surface Water Quality Standards

FIGURES

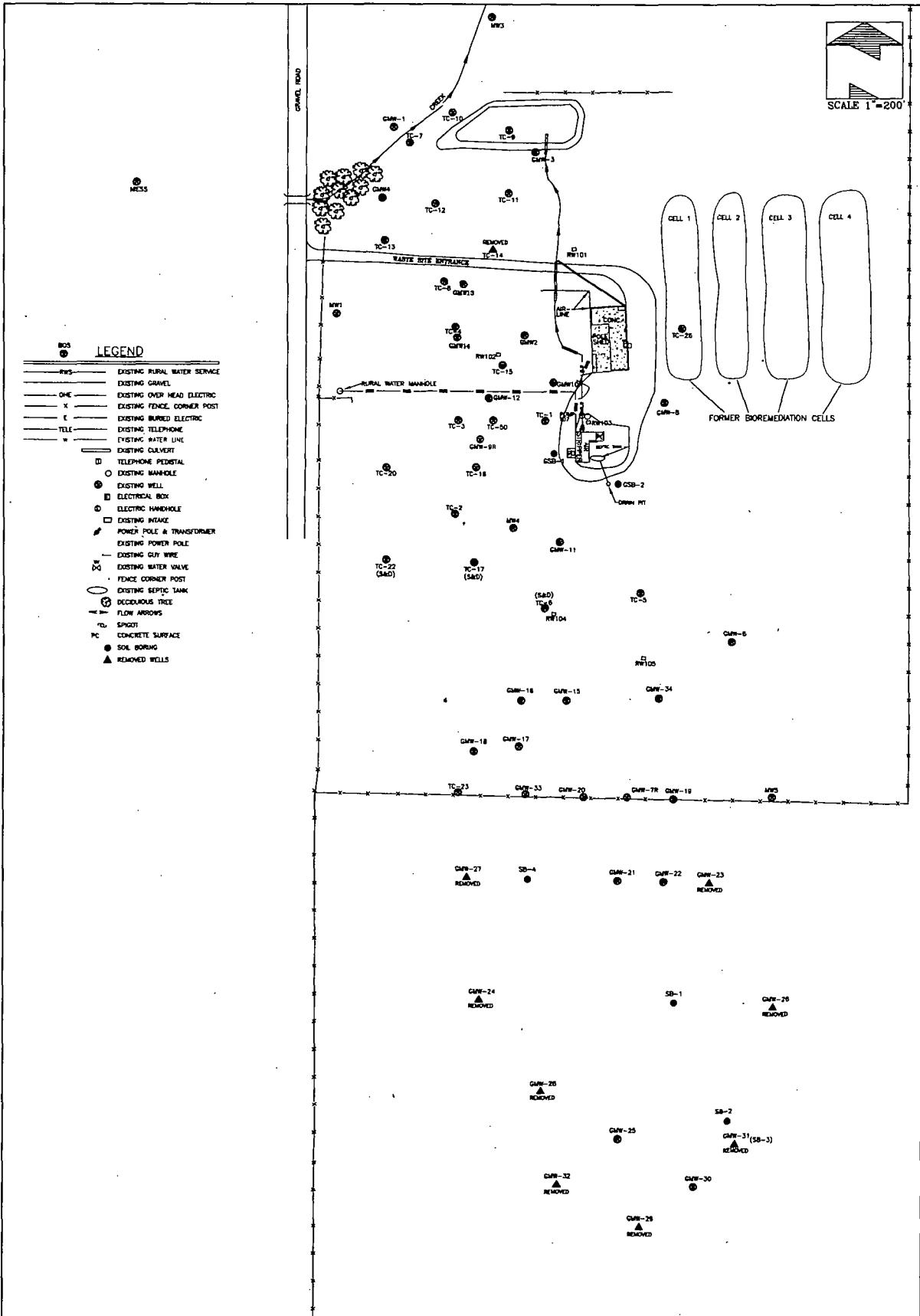


FIGURE 1
SITE MAP
VOGEL PAINT WASTE SITE
MAURICE, IOWA

ORIGINAL DRAWING FURNISHED
BY DGR & ASSOCIATES CO.

PROJECT #: 91-400 DATE: 7/20/2011

DRAWN BY: TAB CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

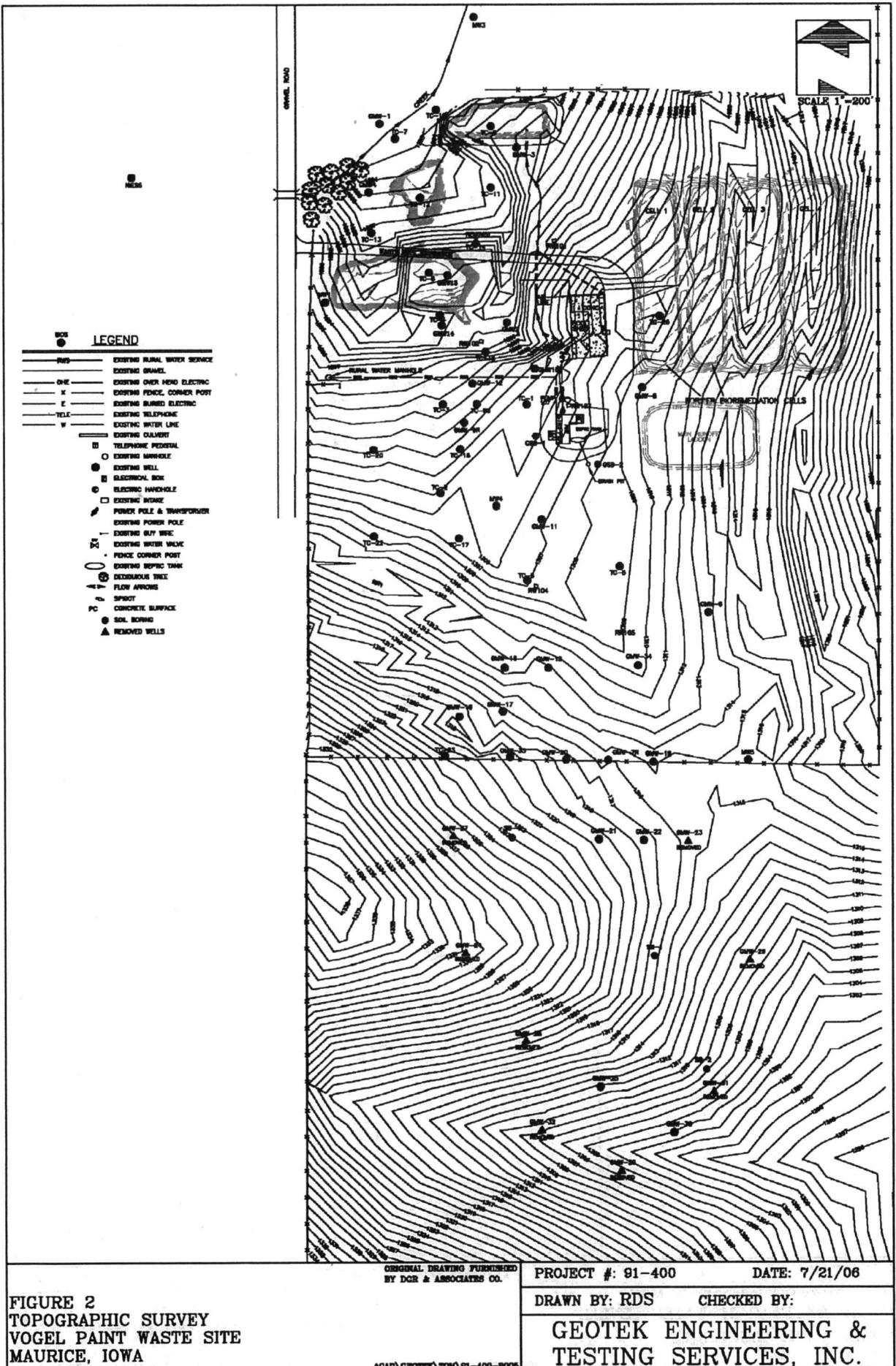


FIGURE 2
TOPOGRAPHIC SURVEY
VOGEL PAINT WASTE SITE
MAURICE, IOWA

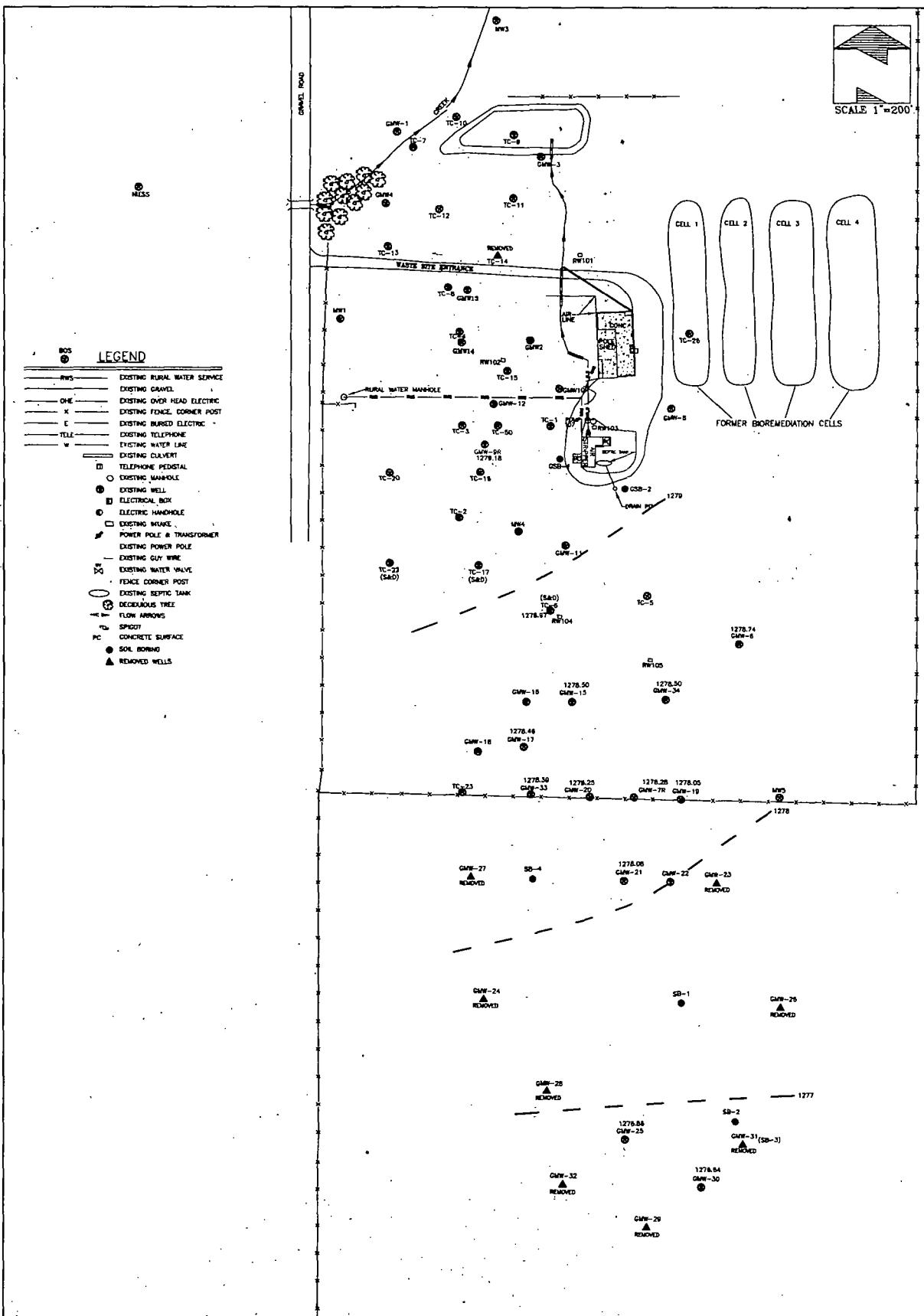


FIGURE 3
GROUNDWATER CONTOUR MAP
BASED ON 12-9-11 WATER LEVELS
VOGEL PAINT WAIST SITE
MAURICE, IOWA

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PROJECT #: 91-400 DATE: 7/20/2011

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TESTING SERVICES, INC.**

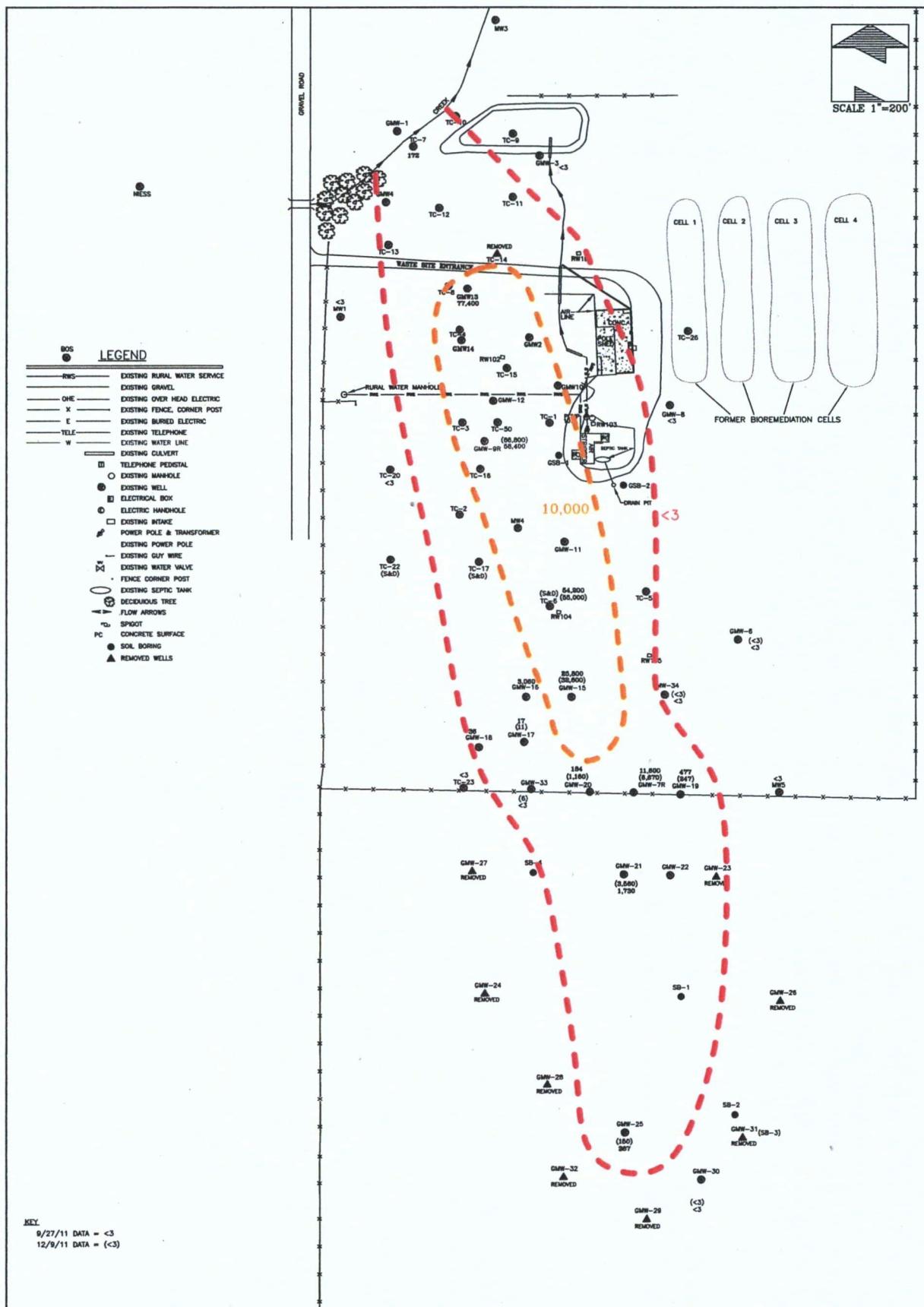


FIGURE 4
XYLENE PLUME MAP
9/27/11 & 12/9/11 DATA (PPB)
VOGEL PAINT WASTE SITE
MAURICE, IOWA

ORIGINAL DRAWING FURNISHED
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PROJECT #: 91-400 DATE: 2-24-12

DRAWN BY: TAB CHECKED BY:

GEOTEK ENGINEERING &
TESTING SERVICES, INC.

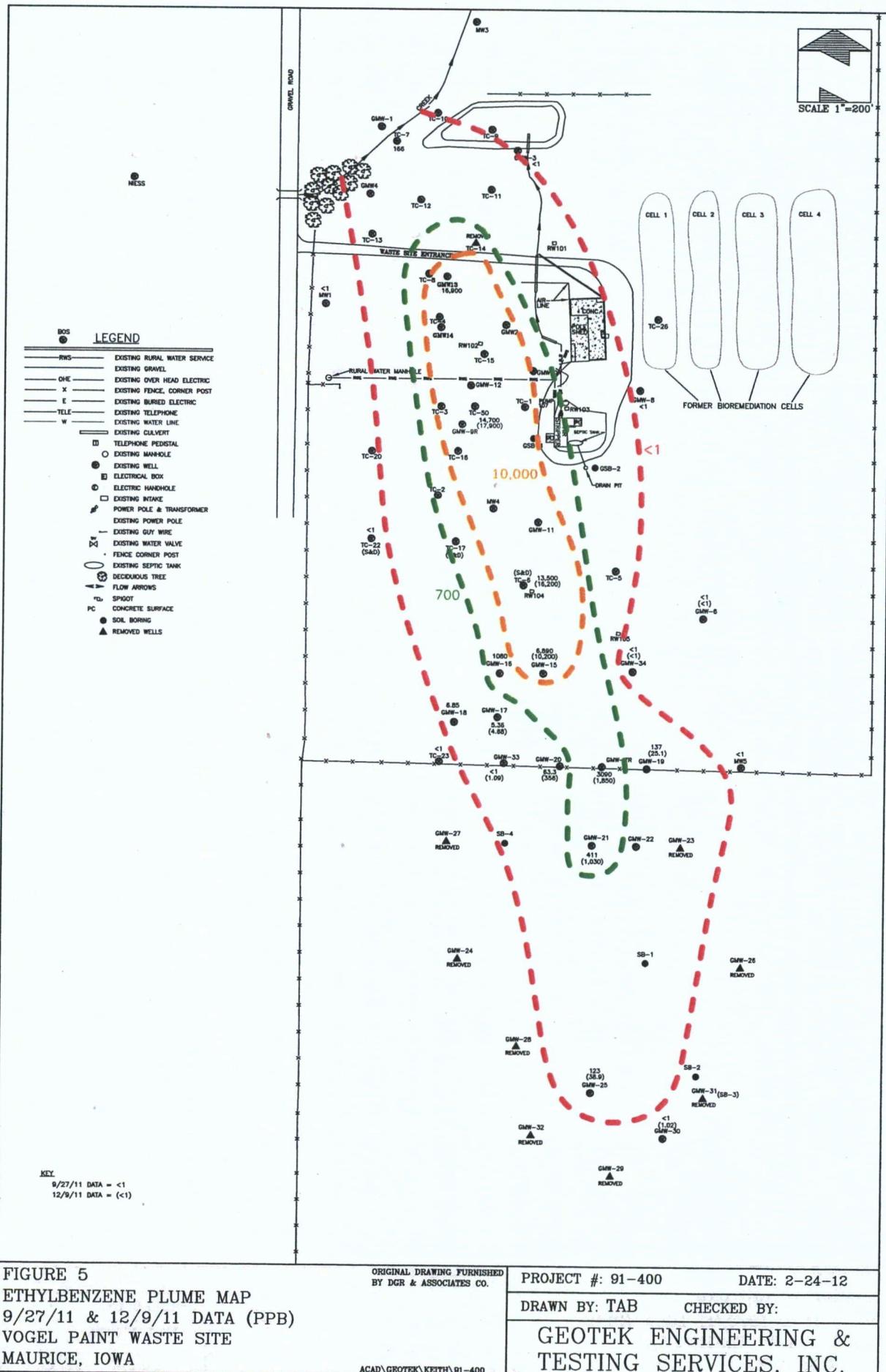


FIGURE 5
ETHYLBENZENE PLUME MAP
9/27/11 & 12/9/11 DATA (PPB)
VOGEL PAINT WASTE SITE
MAURICE, IOWA

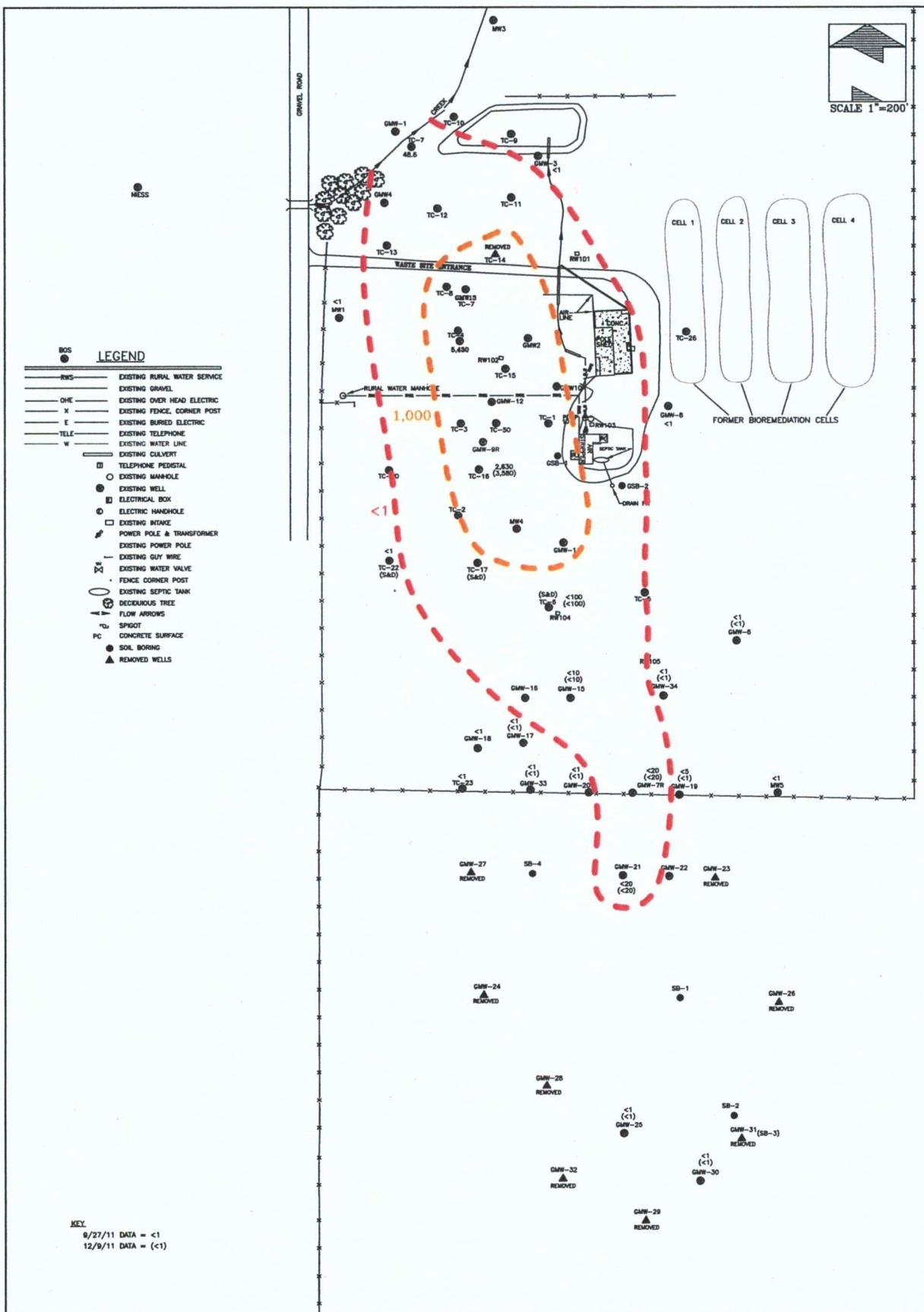


FIGURE 6
TOLUENE PLUME MAP
9/27/11 & 12/9/11 DATA (PPB)
VOGEL PAINT WASTE SITE
MAURICE, IOWA

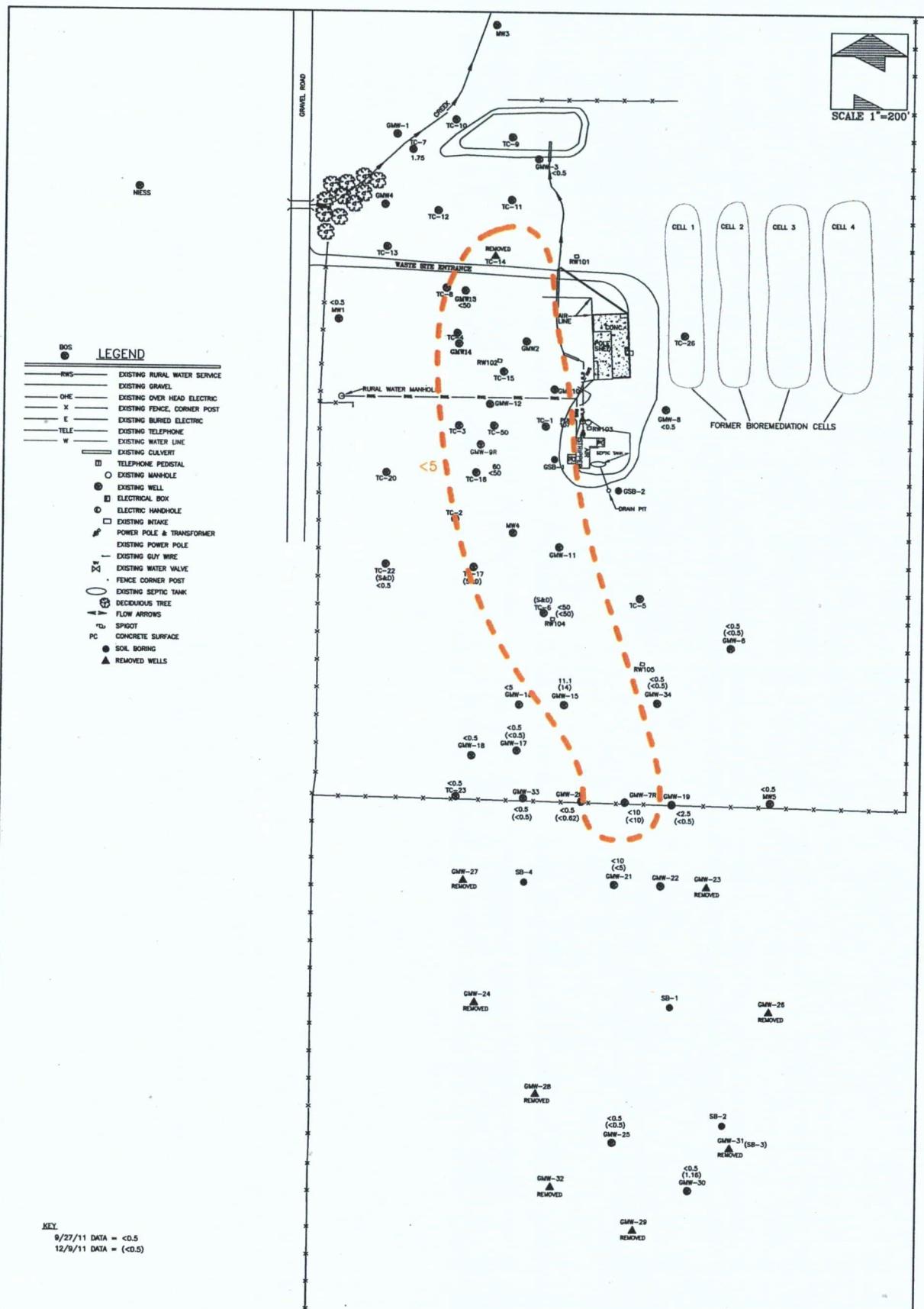
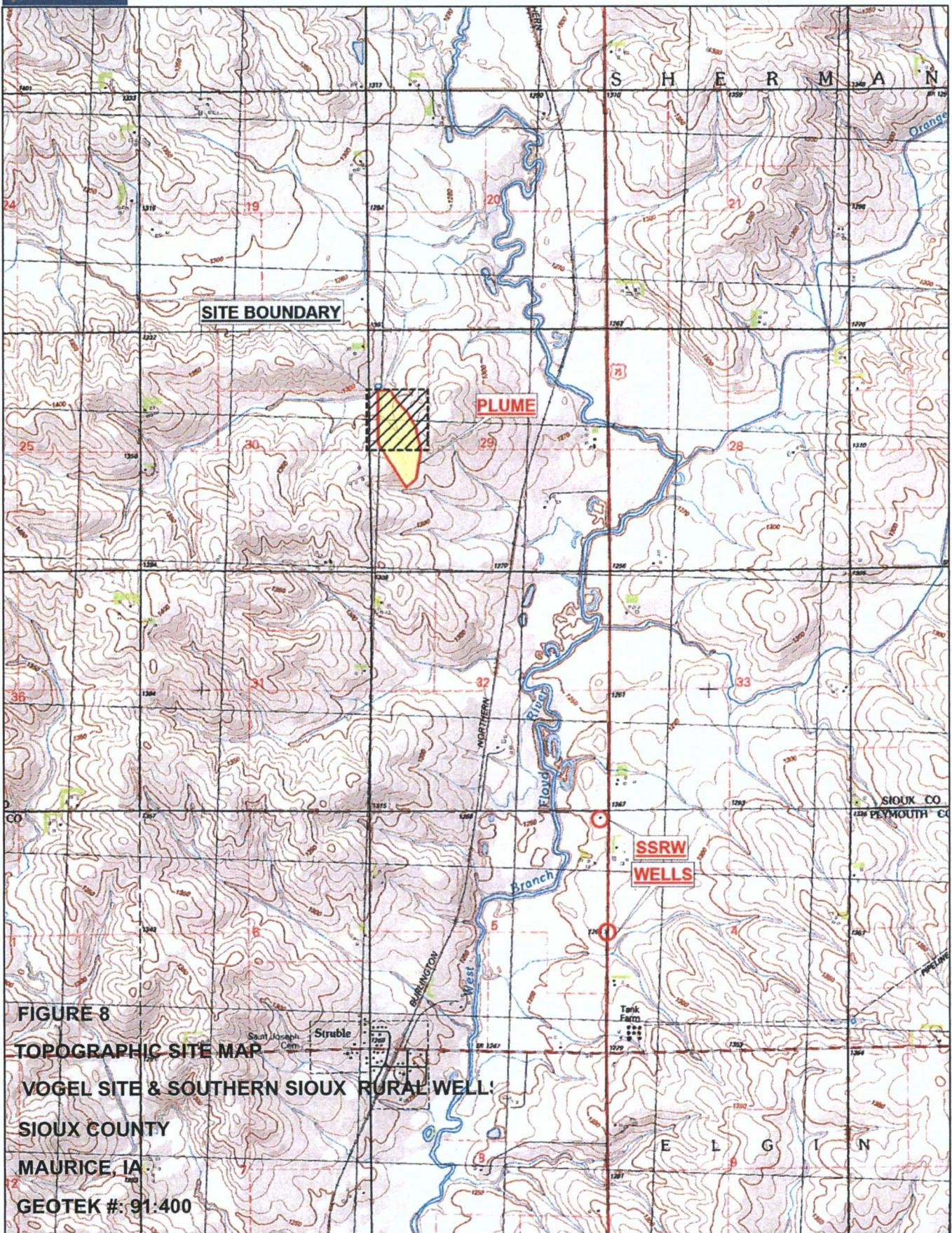


FIGURE 7
BENZENE PLUME MAP
9/27/11 & 12/9/11 DATA (PPB)
VOGEL PAINT WASTE SITE
MAURICE, IOWA

ORIGINAL DRAWING FURNISHED
BY DGR & ASSOCIATES CO.

PROJECT #: 91-400	DATE: 2-24-12
DRAWN BY: TAB	CHECKED BY:
GEOTEK ENGINEERING & TESTING SERVICES, INC.	



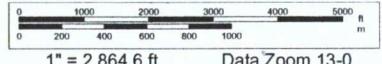
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TN
★
MN (3.1°E)

Scale 1 : 34,375



$$1'' = 2,864.6 \text{ ft}$$

Data Zoom 13-0

APPENDIX A
LABORATORY ANALYTICAL DATA

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Cedar Falls

704 Enterprise Drive

Cedar Falls, IA 50613

Tel: 800-750-2401

TestAmerica Job ID: CUL0713

Client Project/Site: 91-400

Client Project Description: Vogel's

For:

GEOTEK ENGINEERING & TESTING SERVICES

909 E. 50th Street

Sioux Falls, SD 57104

Attn: Tom Chap

Angela Muehling

Authorized for release by:

12/21/2011 11:57:22 AM

Angela Muehling

Project Coordinator

Angela.Muehling@testamericainc.com

Designee for

Derrick Klinkenberg

Organics Manager

derrick.klinkenberg@testamericainc.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Sample Summary

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
CUL0713-01	GMW-6	Ground Water	12/09/11 11:15	12/13/11 09:17
CUL0713-02	GMW-7R	Ground Water	12/09/11 10:45	12/13/11 09:17
CUL0713-03	GMW-9R	Ground Water	12/09/11 12:30	12/13/11 09:17
CUL0713-04	GMW-15	Ground Water	12/09/11 11:45	12/13/11 09:17
CUL0713-05	GMW-17	Ground Water	12/09/11 12:00	12/13/11 09:17
CUL0713-06	GMW-19	Ground Water	12/09/11 11:00	12/13/11 09:17
CUL0713-07	GMW-20	Ground Water	12/09/11 10:30	12/13/11 09:17
CUL0713-08	GMW-21	Ground Water	12/09/11 10:00	12/13/11 09:17
CUL0713-09	GMW-25	Ground Water	12/09/11 09:30	12/13/11 09:17
CUL0713-10	GMW-30	Ground Water	12/09/11 09:45	12/13/11 09:17
CUL0713-11	GMW-33	Ground Water	12/09/11 10:15	12/13/11 09:17
CUL0713-12	GMW-34	Ground Water	12/09/11 11:30	12/13/11 09:17
CUL0713-13	TC-6D	Ground Water	12/09/11 12:15	12/13/11 09:17

Detection Summary

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-6

Lab Sample ID: CUL0713-01

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH	>2	P	2.00		units	1.00		SW 9041	Total

Client Sample ID: GMW-7R

Lab Sample ID: CUL0713-02

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene - RE1	1850		20.0		ug/L	20.0		SW 8260B	Total
Xylenes, total - RE1	6670		60.0		ug/L	20.0		SW 8260B	Total

Client Sample ID: GMW-9R

Lab Sample ID: CUL0713-03

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	17900	M1	100		ug/L	100		SW 8260B	Total
Toluene	3580		100		ug/L	100		SW 8260B	Total
Xylenes, total	66800	M1	300		ug/L	100		SW 8260B	Total

Client Sample ID: GMW-15

Lab Sample ID: CUL0713-04

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	14.0		5.00		ug/L	10.0		SW 8260B	Total
Ethylbenzene - RE1	10200		100		ug/L	100		SW 8260B	Total
Xylenes, total - RE1	32600		300		ug/L	100		SW 8260B	Total

Client Sample ID: GMW-17

Lab Sample ID: CUL0713-05

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	4.68		1.00		ug/L	1.00		SW 8260B	Total
Xylenes, total	11.2		3.00		ug/L	1.00		SW 8260B	Total

Client Sample ID: GMW-19

Lab Sample ID: CUL0713-06

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.500		0.500		ug/L	1.00		SW 8260B	Total
Ethylbenzene	25.1		1.00		ug/L	1.00		SW 8260B	Total
Xylenes, total	247		3.00		ug/L	1.00		SW 8260B	Total

Client Sample ID: GMW-20

Lab Sample ID: CUL0713-07

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.620		0.500		ug/L	1.00		SW 8260B	Total
Ethylbenzene - RE1	356		10.0		ug/L	10.0		SW 8260B	Total
Xylenes, total - RE1	1160		30.0		ug/L	10.0		SW 8260B	Total

Client Sample ID: GMW-21

Lab Sample ID: CUL0713-08

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	1030		10.0		ug/L	10.0		SW 8260B	Total
Xylenes, total	3560		30.0		ug/L	10.0		SW 8260B	Total

Client Sample ID: GMW-25

Lab Sample ID: CUL0713-09

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene - RE1	38.9		1.00		ug/L	1.00		SW 8260B	Total
Xylenes, total - RE1	150		3.00		ug/L	1.00		SW 8260B	Total

Detection Summary

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

1

Client Sample ID: GMW-30

Lab Sample ID: CUL0713-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	1.16		0.500		ug/L	1.00		SW 8260B	Total
Ethylbenzene - RE1	1.02		1.00		ug/L	1.00		SW 8260B	Total

4

5

Client Sample ID: GMW-33

Lab Sample ID: CUL0713-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene - RE1	1.09		1.00		ug/L	1.00		SW 8260B	Total
Xylenes, total - RE1	5.76		3.00		ug/L	1.00		SW 8260B	Total

6

8

Client Sample ID: GMW-34

Lab Sample ID: CUL0713-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH	>2	P	2.00		units	1.00		SW 9041	Total

Client Sample ID: TC-6D

Lab Sample ID: CUL0713-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	16200		100		ug/L	100		SW 8260B	Total
Xylenes, total	55000		300		ug/L	100		SW 8260B	Total

13

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-6

Date Collected: 12/09/11 11:15

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thursheim

Lab Sample ID: CUL0713-01

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

1

2

5

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.500		0.500		ug/L		12/17/11 00:00	12/17/11 07:57	1.00
2-Butanone (MEK)	<10.0		10.0		ug/L		12/17/11 00:00	12/17/11 07:57	1.00
Ethylbenzene	<1.00		1.00		ug/L		12/17/11 00:00	12/17/11 07:57	1.00
Toluene	<1.00		1.00		ug/L		12/17/11 00:00	12/17/11 07:57	1.00
Xylenes, total	<3.00		3.00		ug/L		12/17/11 00:00	12/17/11 07:57	1.00
Surrogate		%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Dibromofluoromethane	86			75 - 120			12/17/11 00:00	12/17/11 07:57	1.00
Toluene-d8	98			80 - 120			12/17/11 00:00	12/17/11 07:57	1.00
4-Bromofluorobenzene	106			75 - 110			12/17/11 00:00	12/17/11 07:57	1.00

Method: SW 9041 - VOC Preservation Check

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	>2	P	2.00		units		12/19/11 15:41	12/19/11 15:50	1.00

13

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-7R

Date Collected: 12/09/11 10:45

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thürshem

Lab Sample ID: CUL0713-02

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

1

5

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<10.0		10.0		ug/L		12/17/11 00:00	12/17/11 11:44	20.0
2-Butanone (MEK)	<200		200		ug/L		12/17/11 00:00	12/17/11 11:44	20.0
Toluene	<20.0		20.0		ug/L		12/17/11 00:00	12/17/11 11:44	20.0
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	81		75 - 120				12/17/11 00:00	12/17/11 11:44	20.0
Toluene-d8	96		80 - 120				12/17/11 00:00	12/17/11 11:44	20.0
4-Bromofluorobenzene	104		75 - 110				12/17/11 00:00	12/17/11 11:44	20.0

Method: SW 8260B - Volatile Organic Compounds - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	1850		20.0		ug/L		12/19/11 00:00	12/19/11 11:00	20.0
Xylenes, total	6670		60.0		ug/L		12/19/11 00:00	12/19/11 11:00	20.0
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	103		75 - 120				12/19/11 00:00	12/19/11 11:00	20.0
Toluene-d8	95		80 - 120				12/19/11 00:00	12/19/11 11:00	20.0
4-Bromofluorobenzene	102		75 - 110				12/19/11 00:00	12/19/11 11:00	20.0

Method: SW 9041 - VOC Preservation Check

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<2.00		2.00		units		12/19/11 15:41	12/19/11 15:50	1.00

13

13

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-9R

Date Collected: 12/09/11 12:30

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thursheim

Lab Sample ID: CUL0713-03

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

1

5

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<50.0		50.0		ug/L		12/17/11 00:00	12/17/11 12:34	100
2-Butanone (MEK)	<1000		1000		ug/L		12/17/11 00:00	12/17/11 12:34	100
Ethylbenzene	17900	M1	100		ug/L		12/17/11 00:00	12/17/11 12:34	100
Toluene	3580		100		ug/L		12/17/11 00:00	12/17/11 12:34	100
Xylenes, total	66800	M1	300		ug/L		12/17/11 00:00	12/17/11 12:34	100
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	80		75 - 120				12/17/11 00:00	12/17/11 12:34	100
Toluene-d8	97		80 - 120				12/17/11 00:00	12/17/11 12:34	100
4-Bromofluorobenzene	105		75 - 110				12/17/11 00:00	12/17/11 12:34	100

Method: SW 9041 - VOC Preservation Check

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<2.00		2.00		units		12/19/11 15:41	12/19/11 15:50	1.00

13

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

1

Client Sample ID: GMW-15

Date Collected: 12/09/11 11:45

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thursheim

Lab Sample ID: CUL0713-04

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

5

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	14.0		5.00		ug/L		12/17/11 00:00	12/17/11 11:19	10.0
2-Butanone (MEK)	<100		100		ug/L		12/17/11 00:00	12/17/11 11:19	10.0
Toluene	<10.0		10.0		ug/L		12/17/11 00:00	12/17/11 11:19	10.0
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	83		75 - 120				12/17/11 00:00	12/17/11 11:19	10.0
Toluene-d8	98		80 - 120				12/17/11 00:00	12/17/11 11:19	10.0
4-Bromofluorobenzene	103		75 - 110				12/17/11 00:00	12/17/11 11:19	10.0

Method: SW 8260B - Volatile Organic Compounds - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	10200		100		ug/L		12/19/11 00:00	12/19/11 11:23	100
Xylenes, total	32600		300		ug/L		12/19/11 00:00	12/19/11 11:23	100
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	112		75 - 120				12/19/11 00:00	12/19/11 11:23	100
Toluene-d8	95		80 - 120				12/19/11 00:00	12/19/11 11:23	100
4-Bromofluorobenzene	100		75 - 110				12/19/11 00:00	12/19/11 11:23	100

Method: SW 9041 - VOC Preservation Check

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<2.00		2.00		units		12/19/11 15:41	12/19/11 15:50	1.00

13

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-17

Date Collected: 12/09/11 12:00

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thursheim

Lab Sample ID: CUL0713-05

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

1

5

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.500		0.500		ug/L		12/17/11 00:00	12/17/11 08:23	1.00
2-Butanone (MEK)	<10.0		10.0		ug/L		12/17/11 00:00	12/17/11 08:23	1.00
Ethylbenzene	4.68		1.00		ug/L		12/17/11 00:00	12/17/11 08:23	1.00
Toluene	<1.00		1.00		ug/L		12/17/11 00:00	12/17/11 08:23	1.00
Xylenes, total	11.2		3.00		ug/L		12/17/11 00:00	12/17/11 08:23	1.00
Surrogate		%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Dibromofluoromethane	84			75 - 120			12/17/11 00:00	12/17/11 08:23	1.00
Toluene-d8	97			80 - 120			12/17/11 00:00	12/17/11 08:23	1.00
4-Bromofluorobenzene	107			75 - 110			12/17/11 00:00	12/17/11 08:23	1.00

Method: SW 9041 - VOC Preservation Check

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<2.00		2.00		units		12/19/11 15:41	12/19/11 15:50	1.00

13

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-19

Date Collected: 12/09/11 11:00

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thursheim

Lab Sample ID: CUL0713-06

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

1

5

6

13

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.500		0.500		ug/L		12/17/11 00:00	12/17/11 08:48	1.00
2-Butanone (MEK)	<10.0		10.0		ug/L		12/17/11 00:00	12/17/11 08:48	1.00
Ethylbenzene	25.1		1.00		ug/L		12/17/11 00:00	12/17/11 08:48	1.00
Toluene	<1.00		1.00		ug/L		12/17/11 00:00	12/17/11 08:48	1.00
Xylenes, total	247		3.00		ug/L		12/17/11 00:00	12/17/11 08:48	1.00
Surrogate	%Recovery	Qualifier		Limits			Prepared	Analyzed	Dil Fac
Dibromofluoromethane	84			75 - 120			12/17/11 00:00	12/17/11 08:48	1.00
Toluene-d8	97			80 - 120			12/17/11 00:00	12/17/11 08:48	1.00
4-Bromofluorobenzene	105			75 - 110			12/17/11 00:00	12/17/11 08:48	1.00

Method: SW 9041 - VOC Preservation Check

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<2.00		2.00		units		12/19/11 15:41	12/19/11 15:50	1.00

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-20

Date Collected: 12/09/11 10:30

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thrusheim

Lab Sample ID: CUL0713-07

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

1

5

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.620		0.500		ug/L		12/17/11 00:00	12/17/11 09:13	1.00
2-Butanone (MEK)	<10.0		10.0		ug/L		12/17/11 00:00	12/17/11 09:13	1.00
Toluene	<1.00		1.00		ug/L		12/17/11 00:00	12/17/11 09:13	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	82		75 - 120				12/17/11 00:00	12/17/11 09:13	1.00
Toluene-d8	97		80 - 120				12/17/11 00:00	12/17/11 09:13	1.00
4-Bromofluorobenzene	103		75 - 110				12/17/11 00:00	12/17/11 09:13	1.00

Method: SW 8260B - Volatile Organic Compounds - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	356		10.0		ug/L		12/19/11 00:00	12/19/11 09:31	10.0
Xylenes, total	1160		30.0		ug/L		12/19/11 00:00	12/19/11 09:31	10.0
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	105		75 - 120				12/19/11 00:00	12/19/11 09:31	10.0
Toluene-d8	95		80 - 120				12/19/11 00:00	12/19/11 09:31	10.0
4-Bromofluorobenzene	98		75 - 110				12/19/11 00:00	12/19/11 09:31	10.0

Method: SW 9041 - VOC Preservation Check

Analyte.	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<2.00		2.00		units		12/19/11 15:41	12/19/11 15:50	1.00

1G3

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-21

Date Collected: 12/09/11 10:00

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thursheim

Lab Sample ID: CUL0713-08

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

1

5

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<5.00		5.00		ug/L		12/19/11 00:00	12/19/11 09:09	10.0
2-Butanone (MEK)	<100		100		ug/L		12/19/11 00:00	12/19/11 09:09	10.0
Ethylbenzene	1030		10.0		ug/L		12/19/11 00:00	12/19/11 09:09	10.0
Toluene	<10.0		10.0		ug/L		12/19/11 00:00	12/19/11 09:09	10.0
Xylenes, total	3560		30.0		ug/L		12/19/11 00:00	12/19/11 09:09	10.0
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	100		75 - 120				12/19/11 00:00	12/19/11 09:09	10.0
Toluene-d8	97		80 - 120				12/19/11 00:00	12/19/11 09:09	10.0
4-Bromofluorobenzene	104		75 - 110				12/19/11 00:00	12/19/11 09:09	10.0

Method: SW 9041 - VOC Preservation Check

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<2.00		2.00		units		12/19/11 15:41	12/19/11 15:50	1.00

13

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-25

Date Collected: 12/09/11 09:30

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thrusheim

Lab Sample ID: CUL0713-09

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

5

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.500		0.500		ug/L		12/17/11 00:00	12/17/11 09:38	1.00
2-Butanone (MEK)	<10.0		10.0		ug/L		12/17/11 00:00	12/17/11 09:38	1.00
Toluene	<1.00		1.00		ug/L		12/17/11 00:00	12/17/11 09:38	1.00
Surrogate									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	83		75 - 120				12/17/11 00:00	12/17/11 09:38	1.00
Toluene-d8	96		80 - 120				12/17/11 00:00	12/17/11 09:38	1.00
4-Bromofluorobenzene	105		75 - 110				12/17/11 00:00	12/17/11 09:38	1.00

Method: SW 8260B - Volatile Organic Compounds - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	38.9		1.00		ug/L		12/19/11 00:00	12/19/11 08:02	1.00
Xylenes, total	150		3.00		ug/L		12/19/11 00:00	12/19/11 08:02	1.00
Surrogate									
Dibromofluoromethane	103		75 - 120				12/19/11 00:00	12/19/11 08:02	1.00
Toluene-d8	94		80 - 120				12/19/11 00:00	12/19/11 08:02	1.00
4-Bromofluorobenzene	100		75 - 110				12/19/11 00:00	12/19/11 08:02	1.00

Method: SW 9041 - VOC Preservation Check

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<2.00		2.00		units		12/19/11 15:41	12/19/11 15:50	1.00

13

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-30

Date Collected: 12/09/11 09:45

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thursheim

Lab Sample ID: CUL0713-10

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

1

5

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	1.16		0.500		ug/L		12/17/11 00:00	12/17/11 10:03	1.00
2-Butanone (MEK)	<10.0		10.0		ug/L		12/17/11 00:00	12/17/11 10:03	1.00
Toluene	<1.00		1.00		ug/L		12/17/11 00:00	12/17/11 10:03	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	82		75 - 120				12/17/11 00:00	12/17/11 10:03	1.00
Toluene-d8	98		80 - 120				12/17/11 00:00	12/17/11 10:03	1.00
4-Bromofluorobenzene	105		75 - 110			o	12/17/11 00:00	12/17/11 10:03	1.00

Method: SW 8260B - Volatile Organic Compounds - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	1.02		1.00		ug/L		12/19/11 00:00	12/19/11 07:39	1.00
Xylenes, total	<3.00		3.00		ug/L		12/19/11 00:00	12/19/11 07:39	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	105		75 - 120				12/19/11 00:00	12/19/11 07:39	1.00
Toluene-d8	99		80 - 120				12/19/11 00:00	12/19/11 07:39	1.00
4-Bromofluorobenzene	101		75 - 110				12/19/11 00:00	12/19/11 07:39	1.00

Method: SW 9041 - VOC Preservation Check

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<2.00		2.00		units		12/19/11 15:41	12/19/11 15:50	1.00

13

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-33

Date Collected: 12/09/11 10:15

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thursheim

Lab Sample ID: CUL0713-11

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

5

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.500		0.500		ug/L		12/17/11 00:00	12/17/11 10:28	1.00
2-Butanone (MEK)	<10.0		10.0		ug/L		12/17/11 00:00	12/17/11 10:28	1.00
Toluene	<1.00		1.00		ug/L		12/17/11 00:00	12/17/11 10:28	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	86		75 - 120				12/17/11 00:00	12/17/11 10:28	1.00
Toluene-d8	96		80 - 120				12/17/11 00:00	12/17/11 10:28	1.00
4-Bromofluorobenzene	107		75 - 110				12/17/11 00:00	12/17/11 10:28	1.00

Method: SW 8260B - Volatile Organic Compounds - RE1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	1.09		1.00		ug/L		12/20/11 00:00	12/20/11 09:59	1.00
Xylenes, total	5.76		3.00		ug/L		12/20/11 00:00	12/20/11 09:59	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	107		75 - 120				12/20/11 00:00	12/20/11 09:59	1.00
Toluene-d8	94		80 - 120				12/20/11 00:00	12/20/11 09:59	1.00
4-Bromofluorobenzene	97		75 - 110				12/20/11 00:00	12/20/11 09:59	1.00

Method: SW 9041 - VOC Preservation Check

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<2.00		2.00		units		12/19/11 15:41	12/19/11 15:50	1.00

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

1

Client Sample ID: GMW-34

Date Collected: 12/09/11 11:30

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thrusheim

Lab Sample ID: CUL0713-12

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

5

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.500		0.500		ug/L		12/17/11 00:00	12/17/11 10:54	1.00
2-Butanone (MEK)	<10.0		10.0		ug/L		12/17/11 00:00	12/17/11 10:54	1.00
Ethylbenzene	<1.00		1.00		ug/L		12/17/11 00:00	12/17/11 10:54	1.00
Toluene	<1.00		1.00		ug/L		12/17/11 00:00	12/17/11 10:54	1.00
Xylenes, total	<3.00		3.00		ug/L		12/17/11 00:00	12/17/11 10:54	1.00
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Dibromofluoromethane	82		75 - 120				12/17/11 00:00	12/17/11 10:54	1.00
Toluene-d8	97		80 - 120				12/17/11 00:00	12/17/11 10:54	1.00
4-Bromofluorobenzene	106		75 - 110				12/17/11 00:00	12/17/11 10:54	1.00

Method: SW 9041 - VOC Preservation Check

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	>2	P	2.00		units		12/19/11 15:41	12/19/11 15:50	1.00

13

Client Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

1

Client Sample ID: TC-6D

Date Collected: 12/09/11 12:15

Date Received: 12/13/11 09:17

Sampler Name: Jeff Thursheim

Lab Sample ID: CUL0713-13

Matrix: Ground Water

Sampler Phone Number: 605-335-5512

5

Method: SW 8260B - Volatile Organic Compounds

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<50.0		50.0		ug/L		12/20/11 00:00	12/20/11 10:21	100
2-Butanone (MEK)	<1000		1000		ug/L		12/20/11 00:00	12/20/11 10:21	100
Ethylbenzene	16200		100		ug/L		12/20/11 00:00	12/20/11 10:21	100
Toluene	<100		100		ug/L		12/20/11 00:00	12/20/11 10:21	100
Xylenes, total	55000		300		ug/L		12/20/11 00:00	12/20/11 10:21	100
Surrogate		%Recovery		Qualifier	Limits		Prepared	Analyzed	Dil Fac
Dibromofluoromethane		102			75 - 120		12/20/11 00:00	12/20/11 10:21	100
Toluene-d8		94			80 - 120		12/20/11 00:00	12/20/11 10:21	100
4-Bromofluorobenzene		99			75 - 110		12/20/11 00:00	12/20/11 10:21	100

Method: SW 9041 - VOC Preservation Check

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<2.00		2.00		units		12/16/11 15:57	12/19/11 11:28	1.00

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Surrogate Summary

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

Method: SW 8260B - Volatile Organic Compounds

Matrix: Ground Water

Prep Type: Total

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		DBFM (75-120)	Toluene-d8 (80-120)	BFB (75-110)
CUL0713-01	GMW-6	86	98	106
CUL0713-02	GMW-7R	81	96	104
CUL0713-02 - RE1	GMW-7R	103	95	102
CUL0713-03	GMW-9R	80	97	105
CUL0713-04	GMW-15	83	98	103
CUL0713-04 - RE1	GMW-15	112	95	100
CUL0713-05	GMW-17	84	97	107
CUL0713-06	GMW-19	84	97	105
CUL0713-07	GMW-20	82	97	103
CUL0713-07 - RE1	GMW-20	105	95	98
CUL0713-08	GMW-21	100	97	104
CUL0713-09	GMW-25	83	96	105
CUL0713-09 - RE1	GMW-25	103	94	100
CUL0713-10	GMW-30	82	98	105
CUL0713-10 - RE1	GMW-30	105	99	101
CUL0713-11	GMW-33	86	96	107
CUL0713-11 - RE1	GMW-33	107	94	97
CUL0713-12	GMW-34	82	97	106
CUL0713-13	TC-6D	102	94	99

Surrogate Legend

DBFM = Dibromofluoromethane

Toluene-d8 = Toluene-d8

BFB = 4-Bromofluorobenzene

Method: SW 8260B - Volatile Organic Compounds

Matrix: Water - NonPotable

Prep Type: Total

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		DBFM (75-120)	Toluene-d8 (80-120)	BFB (75-110)
11L0818-BLK1	Method Blank	84	97	107
11L0867-BLK1	Method Blank	101	96	99
11L0950-BLK1	Method Blank	104	94	99

Surrogate Legend

DBFM = Dibromofluoromethane

Toluene-d8 = Toluene-d8

BFB = 4-Bromofluorobenzene

Method: SW 8260B - Volatile Organic Compounds

Matrix: Water - NonPotable

Prep Type: Total

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		DBFM (75-120)	Toluene-d8 (80-120)	BFB (80-120)
11L0818-BS1	Lab Control Sample	84	97	104
11L0818-MS1	GMW-9R	85	98	103
11L0818-MSD1	GMW-9R	84	97	103
11L0867-BS1	Lab Control Sample	104	97	104
11L0867-BSD1	Lab Control Sample Dup	111	94	106

Surrogate Summary

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

1

Method: SW 8260B - Volatile Organic Compounds (Continued)

Matrix: Water - NonPotable

Prep Type: Total

5

6

7

8

13

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DBFM (75-120)	Toluene-d8 (80-120)	BFB (80-120)
11L0950-BS1	Lab Control Sample	105	96	102
11L0950-BS2	Lab Control Sample	113	95	102
11L0950-BS3	Lab Control Sample	114	95	97
11L0950-BS4	Lab Control Sample	106	96	103
11L0950-MS1	Matrix Spike	113	94	97
11L0950-MSD1	Matrix Spike Duplicate	111	97	103

Surrogate Legend

DBFM = Dibromofluoromethane

Toluene-d8 = Toluene-d8

BFB = 4-Bromofluorobenzene

QC Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

Method: SW 8260B - Volatile Organic Compounds

Lab Sample ID: 11L0818-BLK1

Matrix: Water - NonPotable

Analysis Batch: 11L0818

Client Sample ID: Method Blank

Prep Type: Total

Prep Batch: 11L0818_P

Analyte	Blank	Blank	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier					Prepared	Analyzed	Dil Fac
Benzene	<0.500		0.500		ug/L		12/17/11 00:00	12/17/11 06:17	1.00
2-Butanone (MEK)	<10.0		10.0		ug/L		12/17/11 00:00	12/17/11 06:17	1.00
Ethylbenzene	<1.00		1.00		ug/L		12/17/11 00:00	12/17/11 06:17	1.00
Toluene	<1.00		1.00		ug/L		12/17/11 00:00	12/17/11 06:17	1.00
Xylenes, total	<3.00		3.00		ug/L		12/17/11 00:00	12/17/11 06:17	1.00

Surrogate	Blank	Blank	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier		Prepared	Analyzed	
Dibromofluoromethane	84		75 - 120	12/17/11 00:00	12/17/11 06:17	1.00
Toluene-d8	97		80 - 120	12/17/11 00:00	12/17/11 06:17	1.00
4-Bromofluorobenzene	107		75 - 110	12/17/11 00:00	12/17/11 06:17	1.00

Lab Sample ID: 11L0818-BS1

Matrix: Water - NonPotable

Analysis Batch: 11L0818

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 11L0818_P

Analyte	Spike	LCS	LCS	Unit	D	%Rec.	Limits
	Added	Result	Qualifier				
Benzene	20.0	19.7		ug/L		99	70 - 130
2-Butanone (MEK)	20.0	19.5		ug/L		97	55 - 140
Ethylbenzene	20.0	19.1		ug/L		95	70 - 130
Toluene	20.0	19.3		ug/L		97	70 - 135
Xylenes, total	60.0	58.2		ug/L		97	70 - 130

Surrogate	LCS	LCS	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier		Prepared	Analyzed	
Dibromofluoromethane	84		75 - 120	12/17/11 00:00	12/17/11 06:17	1.00
Toluene-d8	97		80 - 120	12/17/11 00:00	12/17/11 06:17	1.00
4-Bromofluorobenzene	104		80 - 120	12/17/11 00:00	12/17/11 06:17	1.00

Lab Sample ID: 11L0818-MS1

Matrix: Water - NonPotable

Analysis Batch: 11L0818

Client Sample ID: GMW-9R

Prep Type: Total

Prep Batch: 11L0818_P

Analyte	Sample	Sample	Spike	Matrix Spike	Matrix Spike	Unit	D	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier				
Benzene	<50.0		20.0	21.1		ug/L		105	50 - 130
2-Butanone (MEK)	<1000		20.0	20.2		ug/L		101	45 - 140
Ethylbenzene	17900	M1	20.0	184	M1	ug/L		23	45 - 135
Toluene	3580		20.0	53.4		ug/L		88	45 - 135
Xylenes, total	66800	M1	60.0	677	M1	ug/L		15	40 - 135

Surrogate	Matrix Spike	Matrix Spike	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier		Prepared	Analyzed	
Dibromofluoromethane	85		75 - 120	12/17/11 00:00	12/17/11 06:17	1.00
Toluene-d8	98		80 - 120	12/17/11 00:00	12/17/11 06:17	1.00
4-Bromofluorobenzene	103		80 - 120	12/17/11 00:00	12/17/11 06:17	1.00

Lab Sample ID: 11L0818-MSD1

Matrix: Water - NonPotable

Analysis Batch: 11L0818

Analyte	Sample	Sample	Spike	Matrix Spike Dup	Matrix Spike Dup	Unit	D	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Benzene	<50.0		20.0	20.1		ug/L		100	50 - 130	5	20

QC Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

Method: SW 8260B - Volatile Organic Compounds (Continued)

Lab Sample ID: 11L0818-MSD1

Matrix: Water - NonPotable

Analysis Batch: 11L0818

Analyte	Sample	Sample	Spike	Matrix	Spike Dup	Matrix	Spike Dup	D	%Rec.	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier	Unit						
2-Butanone (MEK)	<1000		20.0	19.6		ug/L		98	45 - 140	3	35	
Ethylbenzene	17900	M1	20.0	171	M1	ug/L		-40	45 - 135	7	20	
Toluene	3580		20.0	50.1		ug/L		72	45 - 135	6	20	
Xylenes, total	66800	M1	60.0	630	M1	ug/L		-63	40 - 135	7	20	
Surrogate		Matrix Spike Dup	Matrix Spike Dup									
		%Recovery	Qualifier		Limits							
Dibromofluoromethane	84			75 - 120								
Toluene-d8	97			80 - 120								
4-Bromofluorobenzene	103			80 - 120								

Lab Sample ID: 11L0867-BLK1

Matrix: Water - NonPotable

Analysis Batch: 11L0867

Analyte	Blank	Blank	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	<0.500		0.500		ug/L		12/19/11 00:00	12/19/11 05:47	1.00
2-Butanone (MEK)	<10.0		10.0		ug/L		12/19/11 00:00	12/19/11 05:47	1.00
Ethylbenzene	<1.00		1.00		ug/L		12/19/11 00:00	12/19/11 05:47	1.00
Toluene	<1.00		1.00		ug/L		12/19/11 00:00	12/19/11 05:47	1.00
Xylenes, total	<3.00		3.00		ug/L		12/19/11 00:00	12/19/11 05:47	1.00
Surrogate		Blank	Blank				Prepared	Analyzed	Dil Fac
		%Recovery	Qualifier		Limits				
Dibromofluoromethane	101			75 - 120			12/19/11 00:00	12/19/11 05:47	1.00
Toluene-d8	96			80 - 120			12/19/11 00:00	12/19/11 05:47	1.00
4-Bromofluorobenzene	99			75 - 110			12/19/11 00:00	12/19/11 05:47	1.00

Lab Sample ID: 11L0867-BS1

Matrix: Water - NonPotable

Analysis Batch: 11L0867

Analyte	Spike	LCS	LCS	Unit	D	%Rec.	Limits
	Added	Result	Qualifier				
Benzene	20.0	20.4		ug/L		102	70 - 130
2-Butanone (MEK)	20.0	19.7		ug/L		98	55 - 140
Ethylbenzene	20.0	19.4		ug/L		97	70 - 130
Toluene	20.0	19.4		ug/L		97	70 - 135
Xylenes, total	60.0	57.6		ug/L		96	70 - 130
Surrogate		LCS	LCS				
		%Recovery	Qualifier		Limits		
Dibromofluoromethane	104			75 - 120			
Toluene-d8	97			80 - 120			
4-Bromofluorobenzene	104			80 - 120			

Lab Sample ID: 11L0867-BSD1

Matrix: Water - NonPotable

Analysis Batch: 11L0867

Analyte	Spike	LCS Dup	LCS Dup	Unit	D	%Rec.	Limits	RPD	Limit
	Added	Result	Qualifier						
Benzene	20.0	21.2		ug/L		106	70 - 130	4	25
2-Butanone (MEK)	20.0	20.8		ug/L		104	55 - 140	6	25

QC Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

Method: SW 8260B - Volatile Organic Compounds (Continued)

Lab Sample ID: 11L0867-BSD1

Matrix: Water - NonPotable

Analysis Batch: 11L0867

Client Sample ID: Lab Control Sample Dup

Prep Type: Total

Prep Batch: 11L0867_P

Analyte	Spike Added	LCS Dup Result	LCS Dup Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Ethylbenzene	20.0	19.3		ug/L		96	70 - 130	0.7	35
Toluene	20.0	20.3		ug/L		102	70 - 135	5	30
Xylenes, total	60.0	57.8		ug/L		96	70 - 130	0.5	35

Surrogate *LCS Dup %Recovery* *LCS Dup Qualifier* *Limits*

Surrogate	LCS Dup %Recovery	LCS Dup Qualifier	Limits
Dibromofluoromethane	111		75 - 120
Toluene-d8	94		80 - 120
4-Bromofluorobenzene	106		80 - 120

Lab Sample ID: 11L0950-BLK1

Matrix: Water - NonPotable

Analysis Batch: 11L0950

Client Sample ID: Method Blank

Prep Type: Total

Prep Batch: 11L0950_P

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.500		0.500		ug/L		12/20/11 00:00	12/20/11 06:38	1.00
2-Butanone (MEK)	<10.0		10.0		ug/L		12/20/11 00:00	12/20/11 06:38	1.00
Ethylbenzene	<1.00		1.00		ug/L		12/20/11 00:00	12/20/11 06:38	1.00
Toluene	<1.00		1.00		ug/L		12/20/11 00:00	12/20/11 06:38	1.00
Xylenes, total	<3.00		3.00		ug/L		12/20/11 00:00	12/20/11 06:38	1.00

Surrogate *Blank %Recovery* *Blank Qualifier* *Limits*

Surrogate	Blank %Recovery	Blank Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane	104		75 - 120	12/20/11 00:00	12/20/11 06:38	1.00
Toluene-d8	94		80 - 120	12/20/11 00:00	12/20/11 06:38	1.00
4-Bromofluorobenzene	99		75 - 110	12/20/11 00:00	12/20/11 06:38	1.00

Lab Sample ID: 11L0950-BS1

Matrix: Water - NonPotable

Analysis Batch: 11L0950

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 11L0950_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzene	20.0	20.0		ug/L		100	70 - 130
2-Butanone (MEK)	20.0	18.4		ug/L		92	55 - 140
Ethylbenzene	20.0	19.3		ug/L		96	70 - 130
Toluene	20.0	19.6		ug/L		98	70 - 135
Xylenes, total	60.0	58.7		ug/L		98	70 - 130

Surrogate *LCS %Recovery* *LCS Qualifier* *Limits*

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane	105		75 - 120
Toluene-d8	96		80 - 120
4-Bromofluorobenzene	102		80 - 120

Lab Sample ID: 11L0950-BS2

Matrix: Water - NonPotable

Analysis Batch: 11L0950

Client Sample ID: Lab Control Sample

Prep Type: Total

Prep Batch: 11L0950_P

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzene	20.0	21.4		ug/L		107	70 - 130
2-Butanone (MEK)	20.0	19.2		ug/L		96	55 - 140
Ethylbenzene	20.0	21.0		ug/L		105	70 - 130

QC Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

Method: SW 8260B - Volatile Organic Compounds (Continued)

Lab Sample ID: 11L0950-BS2

Matrix: Water - NonPotable

Analysis Batch: 11L0950

Analyte	Spike		LCS	LCS	Unit	D	%Rec	%Rec.
	Added	Result	Qualifier					
Toluene	20.0	20.8			ug/L		104	70 - 135
Xylenes, total	60.0	61.8			ug/L		103	70 - 130
Surrogate								
<i>Dibromofluoromethane</i>	113		75 - 120					
<i>Toluene-d8</i>	95		80 - 120					
<i>4-Bromofluorobenzene</i>	102		80 - 120					

Lab Sample ID: 11L0950-BS3

Matrix: Water - NonPotable

Analysis Batch: 11L0950

Analyte	Spike		LCS	LCS	Unit	D	%Rec	%Rec.
	Added	Result	Qualifier					
Benzene	20.0	20.4			ug/L		102	70 - 130
2-Butanone (MEK)	20.0	19.2			ug/L		96	55 - 140
Ethylbenzene	20.0	19.0			ug/L		95	70 - 130
Toluene	20.0	19.4			ug/L		97	70 - 135
Xylenes, total	60.0	56.6			ug/L		94	70 - 130
Surrogate								
<i>Dibromofluoromethane</i>	114		75 - 120					
<i>Toluene-d8</i>	95		80 - 120					
<i>4-Bromofluorobenzene</i>	97		80 - 120					

Lab Sample ID: 11L0950-BS4

Matrix: Water - NonPotable

Analysis Batch: 11L0950

Analyte	Spike		LCS	LCS	Unit	D	%Rec	%Rec.
	Added	Result	Qualifier					
Benzene	20.0	21.4			ug/L		107	70 - 130
2-Butanone (MEK)	20.0	19.6			ug/L		98	55 - 140
Ethylbenzene	20.0	19.5			ug/L		97	70 - 130
Toluene	20.0	19.2			ug/L		96	70 - 135
Xylenes, total	60.0	57.1			ug/L		95	70 - 130
Surrogate								
<i>Dibromofluoromethane</i>	106		75 - 120					
<i>Toluene-d8</i>	96		80 - 120					
<i>4-Bromofluorobenzene</i>	103		80 - 120					

Lab Sample ID: 11L0950-MS1

Matrix: Water - NonPotable

Analysis Batch: 11L0950

Analyte	Sample	Sample	Spike	Matrix Spike	Matrix Spike	Unit	D	%Rec	%Rec.
	Result	Qualifier	Added	Result	Qualifier				
Benzene	0.160		20.0	21.1		ug/L		105	50 - 130
2-Butanone (MEK)	0.200		20.0	17.9		ug/L		89	45 - 140
Ethylbenzene	0.210		20.0	18.1		ug/L		89	45 - 135
Toluene	0.350		20.0	18.8		ug/L		92	45 - 135

Client Sample ID: Matrix Spike

Prep Type: Total

Prep Batch: 11L0950_P

QC Sample Results

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

Method: SW 8260B - Volatile Organic Compounds (Continued)

Lab Sample ID: 11L0950-MS1

Matrix: Water - NonPotable

Analysis Batch: 11L0950

Client Sample ID: Matrix Spike

Prep Type: Total

Prep Batch: 11L0950_P

Analyte	Sample	Sample	Spike	Matrix Spike	Matrix Spike	%Rec.			
	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
Xylenes, total	0.420		60.0	54.4		ug/L	90	40 - 135	

Surrogate	Matrix Spike	Matrix Spike	Limits
	%Recovery	Qualifier	
Dibromofluoromethane	113		75 - 120
Toluene-d8	94		80 - 120
4-Bromofluorobenzene	97		80 - 120

Lab Sample ID: 11L0950-MSD1

Matrix: Water - NonPotable

Analysis Batch: 11L0950

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total

Prep Batch: 11L0950_P

Analyte	Sample	Sample	Spike	Matrix Spike Dup	Matrix Spike Dup	%Rec.					
	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	0.160		20.0	20.0		ug/L	99	50 - 130	6	20	
2-Butanone (MEK)	0.200		20.0	16.8		ug/L	83	45 - 140	6	35	
Ethylbenzene	0.210		20.0	17.7		ug/L	88	45 - 135	2	20	
Toluene	0.350		20.0	18.8		ug/L	92	45 - 135	0.2	20	
Xylenes, total	0.420		60.0	54.7		ug/L	90	40 - 135	0.5	20	

Surrogate	Matrix Spike Dup	Matrix Spike Dup	Limits
	%Recovery	Qualifier	
Dibromofluoromethane	111		75 - 120
Toluene-d8	97		80 - 120
4-Bromofluorobenzene	103		80 - 120

QC Association Summary

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

GCMS Volatiles

Analysis Batch: 11L0763

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
CUL0713-13	TC-6D	Total	Ground Water	SW 9041	11L0763_P

Analysis Batch: 11L0818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11L0818-BLK1	Method Blank	Total	Water - NonPotable	SW 8260B	11L0818_P
11L0818-BS1	Lab Control Sample	Total	Water - NonPotable	SW 8260B	11L0818_P
11L0818-MS1	GMW-9R	Total	Water - NonPotable	SW 8260B	11L0818_P
11L0818-MSD1	GMW-9R	Total	Water - NonPotable	SW 8260B	11L0818_P
CUL0713-01	GMW-6	Total	Ground Water	SW 8260B	11L0818_P
CUL0713-02	GMW-7R	Total	Ground Water	SW 8260B	11L0818_P
CUL0713-03	GMW-9R	Total	Ground Water	SW 8260B	11L0818_P
CUL0713-04	GMW-15	Total	Ground Water	SW 8260B	11L0818_P
CUL0713-05	GMW-17	Total	Ground Water	SW 8260B	11L0818_P
CUL0713-06	GMW-19	Total	Ground Water	SW 8260B	11L0818_P
CUL0713-07	GMW-20	Total	Ground Water	SW 8260B	11L0818_P
CUL0713-09	GMW-25	Total	Ground Water	SW 8260B	11L0818_P
CUL0713-10	GMW-30	Total	Ground Water	SW 8260B	11L0818_P
CUL0713-11	GMW-33	Total	Ground Water	SW 8260B	11L0818_P
CUL0713-12	GMW-34	Total	Ground Water	SW 8260B	11L0818_P

Analysis Batch: 11L0833

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
CUL0713-01	GMW-6	Total	Ground Water	SW 9041	11L0833_P
CUL0713-02	GMW-7R	Total	Ground Water	SW 9041	11L0833_P
CUL0713-03	GMW-9R	Total	Ground Water	SW 9041	11L0833_P
CUL0713-04	GMW-15	Total	Ground Water	SW 9041	11L0833_P
CUL0713-05	GMW-17	Total	Ground Water	SW 9041	11L0833_P
CUL0713-06	GMW-19	Total	Ground Water	SW 9041	11L0833_P
CUL0713-07	GMW-20	Total	Ground Water	SW 9041	11L0833_P
CUL0713-08	GMW-21	Total	Ground Water	SW 9041	11L0833_P
CUL0713-09	GMW-25	Total	Ground Water	SW 9041	11L0833_P
CUL0713-10	GMW-30	Total	Ground Water	SW 9041	11L0833_P
CUL0713-11	GMW-33	Total	Ground Water	SW 9041	11L0833_P
CUL0713-12	GMW-34	Total	Ground Water	SW 9041	11L0833_P

Analysis Batch: 11L0867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11L0867-BLK1	Method Blank	Total	Water - NonPotable	SW 8260B	11L0867_P
11L0867-BS1	Lab Control Sample	Total	Water - NonPotable	SW 8260B	11L0867_P
11L0867-BSD1	Lab Control Sample Dup	Total	Water - NonPotable	SW 8260B	11L0867_P
CUL0713-02 - RE1	GMW-7R	Total	Ground Water	SW 8260B	11L0867_P
CUL0713-04 - RE1	GMW-15	Total	Ground Water	SW 8260B	11L0867_P
CUL0713-07 - RE1	GMW-20	Total	Ground Water	SW 8260B	11L0867_P
CUL0713-08	GMW-21	Total	Ground Water	SW 8260B	11L0867_P
CUL0713-09 - RE1	GMW-25	Total	Ground Water	SW 8260B	11L0867_P
CUL0713-10 - RE1	GMW-30	Total	Ground Water	SW 8260B	11L0867_P

QC Association Summary

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

GCMS Volatiles (Continued)

Analysis Batch: 11L0950

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11L0950-BLK1	Method Blank	Total	Water - NonPotable	SW 8260B	11L0950_P
11L0950-BS1	Lab Control Sample	Total	Water - NonPotable	SW 8260B	11L0950_P
11L0950-BS2	Lab Control Sample	Total	Water - NonPotable	SW 8260B	11L0950_P
11L0950-BS3	Lab Control Sample	Total	Water - NonPotable	SW 8260B	11L0950_P
11L0950-BS4	Lab Control Sample	Total	Water - NonPotable	SW 8260B	11L0950_P
11L0950-MS1	Matrix Spike	Total	Water - NonPotable	SW 8260B	11L0950_P
11L0950-MSD1	Matrix Spike Duplicate	Total	Water - NonPotable	SW 8260B	11L0950_P
CUL0713-11 - RE1	GMW-33	Total	Ground Water	SW 8260B	11L0950_P
CUL0713-13	TC-6D	Total	Ground Water	SW 8260B	11L0950_P

Prep Batch: 11L0763_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
CUL0713-13	TC-6D	Total	Ground Water	Default Prep VOC	11L0763_P

Prep Batch: 11L0818_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11L0818-BLK1	Method Blank	Total	Water - NonPotable	SW 5030B	
11L0818-BS1	Lab Control Sample	Total	Water - NonPotable	SW 5030B	
11L0818-MS1	GMW-9R	Total	Water - NonPotable	SW 5030B	
11L0818-MSD1	GMW-9R	Total	Water - NonPotable	SW 5030B	
CUL0713-01	GMW-6	Total	Ground Water	SW 5030B	
CUL0713-02	GMW-7R	Total	Ground Water	SW 5030B	
CUL0713-03	GMW-9R	Total	Ground Water	SW 5030B	
CUL0713-04	GMW-15	Total	Ground Water	SW 5030B	
CUL0713-05	GMW-17	Total	Ground Water	SW 5030B	
CUL0713-06	GMW-19	Total	Ground Water	SW 5030B	
CUL0713-07	GMW-20	Total	Ground Water	SW 5030B	
CUL0713-09	GMW-25	Total	Ground Water	SW 5030B	
CUL0713-10	GMW-30	Total	Ground Water	SW 5030B	
CUL0713-11	GMW-33	Total	Ground Water	SW 5030B	
CUL0713-12	GMW-34	Total	Ground Water	SW 5030B	

Prep Batch: 11L0833_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
CUL0713-01	GMW-6	Total	Ground Water	Default Prep VOC	
CUL0713-02	GMW-7R	Total	Ground Water	Default Prep VOC	
CUL0713-03	GMW-9R	Total	Ground Water	Default Prep VOC	
CUL0713-04	GMW-15	Total	Ground Water	Default Prep VOC	
CUL0713-05	GMW-17	Total	Ground Water	Default Prep VOC	

QC Association Summary

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

GCMS Volatiles (Continued)

Prep Batch: 11L0833_P (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
CUL0713-06	GMW-19	Total	Ground Water	Default Prep VOC	1
CUL0713-07	GMW-20	Total	Ground Water	Default Prep VOC	5
CUL0713-08	GMW-21	Total	Ground Water	Default Prep VOC	6
CUL0713-09	GMW-25	Total	Ground Water	Default Prep VOC	7
CUL0713-10	GMW-30	Total	Ground Water	Default Prep VOC	8
CUL0713-11	GMW-33	Total	Ground Water	Default Prep VOC	9
CUL0713-12	GMW-34	Total	Ground Water	Default Prep VOC	

Prep Batch: 11L0867_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11L0867-BLK1	Method Blank	Total	Water - NonPotable	SW 5030B	
11L0867-BS1	Lab Control Sample	Total	Water - NonPotable	SW 5030B	13
11L0867-BSD1	Lab Control Sample Dup	Total	Water - NonPotable	SW 5030B	
CUL0713-02 - RE1	GMW-7R	Total	Ground Water	SW 5030B	
CUL0713-04 - RE1	GMW-15	Total	Ground Water	SW 5030B	
CUL0713-07 - RE1	GMW-20	Total	Ground Water	SW 5030B	
CUL0713-08	GMW-21	Total	Ground Water	SW 5030B	
CUL0713-09 - RE1	GMW-25	Total	Ground Water	SW 5030B	
CUL0713-10 - RE1	GMW-30	Total	Ground Water	SW 5030B	

Prep Batch: 11L0950_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
11L0950-BLK1	Method Blank	Total	Water - NonPotable	SW 5030B	
11L0950-BS1	Lab Control Sample	Total	Water - NonPotable	SW 5030B	
11L0950-BS2	Lab Control Sample	Total	Water - NonPotable	SW 5030B	
11L0950-BS3	Lab Control Sample	Total	Water - NonPotable	SW 5030B	
11L0950-BS4	Lab Control Sample	Total	Water - NonPotable	SW 5030B	
11L0950-MS1	Matrix Spike	Total	Water - NonPotable	SW 5030B	
11L0950-MSD1	Matrix Spike Duplicate	Total	Water - NonPotable	SW 5030B	
CUL0713-11 - RE1	GMW-33	Total	Ground Water	SW 5030B	
CUL0713-13	TC-6D	Total	Ground Water	SW 5030B	

Lab Chronicle

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-6
Date Collected: 12/09/11 11:15
Date Received: 12/13/11 09:17
Lab Sample ID: CUL0713-01
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0818_P	12/17/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		1.00			11L0818	12/17/11 07:57	SJN	TAL CF
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0833_P	12/19/11 15:41	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0833	12/19/11 15:50	CMM	TAL CF

Client Sample ID: GMW-7R
Date Collected: 12/09/11 10:45
Date Received: 12/13/11 09:17
Lab Sample ID: CUL0713-02
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0818_P	12/17/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		20.0			11L0818	12/17/11 11:44	SJN	TAL CF
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0833_P	12/19/11 15:41	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0833	12/19/11 15:50	CMM	TAL CF
Total	Prep	SW 5030B	RE1	1.00	5 mL	5 mL	11L0867_P	12/19/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B	RE1	20.0			11L0867	12/19/11 11:00	SJN	TAL CF

Client Sample ID: GMW-9R
Date Collected: 12/09/11 12:30
Date Received: 12/13/11 09:17
Lab Sample ID: CUL0713-03
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0818_P	12/17/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		100			11L0818	12/17/11 12:34	SJN	TAL CF
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0833_P	12/19/11 15:41	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0833	12/19/11 15:50	CMM	TAL CF

Client Sample ID: GMW-15
Date Collected: 12/09/11 11:45
Date Received: 12/13/11 09:17
Lab Sample ID: CUL0713-04
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0818_P	12/17/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		10.0			11L0818	12/17/11 11:19	SJN	TAL CF
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0833_P	12/19/11 15:41	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0833	12/19/11 15:50	CMM	TAL CF
Total	Prep	SW 5030B	RE1	1.00	5 mL	5 mL	11L0867_P	12/19/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B	RE1	100			11L0867	12/19/11 11:23	SJN	TAL CF

Lab Chronicle

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: GMW-17

Date Collected: 12/09/11 12:00

Date Received: 12/13/11 09:17

Lab Sample ID: CUL0713-05

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0818_P	12/17/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		1.00			11L0818	12/17/11 08:23	SJN	TAL CF
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0833_P	12/19/11 15:41	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0833	12/19/11 15:50	CMM	TAL CF

Client Sample ID: GMW-19

Date Collected: 12/09/11 11:00

Date Received: 12/13/11 09:17

Lab Sample ID: CUL0713-06

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0818_P	12/17/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		1.00			11L0818	12/17/11 08:48	SJN	TAL CF
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0833_P	12/19/11 15:41	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0833	12/19/11 15:50	CMM	TAL CF

Client Sample ID: GMW-20

Date Collected: 12/09/11 10:30

Date Received: 12/13/11 09:17

Lab Sample ID: CUL0713-07

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0818_P	12/17/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		1.00			11L0818	12/17/11 09:13	SJN	TAL CF
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0833_P	12/19/11 15:41	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0833	12/19/11 15:50	CMM	TAL CF
Total	Prep	SW 5030B	RE1	1.00	5 mL	5 mL	11L0867_P	12/19/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B	RE1	10.0			11L0867	12/19/11 09:31	SJN	TAL CF

Client Sample ID: GMW-21

Date Collected: 12/09/11 10:00

Date Received: 12/13/11 09:17

Lab Sample ID: CUL0713-08

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0867_P	12/19/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		10.0			11L0867	12/19/11 09:09	SJN	TAL CF
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0833_P	12/19/11 15:41	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0833	12/19/11 15:50	CMM	TAL CF

Client Sample ID: GMW-25

Date Collected: 12/09/11 09:30

Date Received: 12/13/11 09:17

Lab Sample ID: CUL0713-09

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0818_P	12/17/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		1.00			11L0818	12/17/11 09:38	SJN	TAL CF

Lab Chronicle

Client: GEOTEK ENGINEERING & TESTING SERVICES
 Project/Site: 91-400

TestAmerica Job ID: CUL0713

1

Client Sample ID: GMW-25

Date Collected: 12/09/11 09:30

Date Received: 12/13/11 09:17

Lab Sample ID: CUL0713-09

Matrix: Ground Water

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Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0833_P	12/19/11 15:41	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0833	12/19/11 15:50	CMM	TAL CF
Total	Prep	SW 5030B	RE1	1.00	5 mL	5 mL	11L0867_P	12/19/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B	RE1	1.00			11L0867	12/19/11 08:02	SJN	TAL CF

Client Sample ID: GMW-30

Date Collected: 12/09/11 09:45

Date Received: 12/13/11 09:17

Lab Sample ID: CUL0713-10

Matrix: Ground Water

8

9

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0818_P	12/17/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		1.00			11L0818	12/17/11 10:03	SJN	TAL CF
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0833_P	12/19/11 15:41	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0833	12/19/11 15:50	CMM	TAL CF
Total	Prep	SW 5030B	RE1	1.00	5 mL	5 mL	11L0867_P	12/19/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B	RE1	1.00			11L0867	12/19/11 07:39	SJN	TAL CF

Client Sample ID: GMW-33

Date Collected: 12/09/11 10:15

Date Received: 12/13/11 09:17

Lab Sample ID: CUL0713-11

Matrix: Ground Water

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Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0818_P	12/17/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		1.00			11L0818	12/17/11 10:28	SJN	TAL CF
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0833_P	12/19/11 15:41	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0833	12/19/11 15:50	CMM	TAL CF
Total	Prep	SW 5030B	RE1	1.00	5 mL	5 mL	11L0950_P	12/20/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B	RE1	1.00			11L0950	12/20/11 09:59	SJN	TAL CF

Client Sample ID: GMW-34

Date Collected: 12/09/11 11:30

Date Received: 12/13/11 09:17

Lab Sample ID: CUL0713-12

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0818_P	12/17/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		1.00			11L0818	12/17/11 10:54	SJN	TAL CF
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0833_P	12/19/11 15:41	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0833	12/19/11 15:50	CMM	TAL CF

Lab Chronicle

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

Client Sample ID: TC-6D

Date Collected: 12/09/11 12:15

Date Received: 12/13/11 09:17

Lab Sample ID: CUL0713-13

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total	Prep	SW 5030B		1.00	5 mL	5 mL	11L0950_P	12/20/11 00:00	SJN	TAL CF
Total	Analysis	SW 8260B		100			11L0950	12/20/11 10:21	SJN	TAL CF
Total	Prep	Default Prep VOC		1.00	5 mL	5 mL	11L0763_P	12/16/11 15:57	CMM	TAL CF
Total	Analysis	SW 9041		1.00			11L0763	12/19/11 11:28	CMM	TAL CF

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL 800-750-2401

Definitions/Glossary

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

Qualifiers

GCMS Volatiles

Qualifier	Qualifier Description
M1	The MS and/or MSD were outside control limits.
P	The sample, as received, was not preserved in accordance to the referenced analytical method.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
dw	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

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Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Cedar Falls	AIHA - LAP	IHLAP		101044
TestAmerica Cedar Falls	Illinois	NELAC	5	200024
TestAmerica Cedar Falls	Iowa	State Program	7	7
TestAmerica Cedar Falls	Kansas	NELAC	7	E-10341
TestAmerica Cedar Falls	Minnesota	NELAC	5	019-999-319
TestAmerica Cedar Falls	North Dakota	State Program	8	R-186
TestAmerica Cedar Falls	Oregon	NELAC	10	IA100001
TestAmerica Cedar Falls	Wisconsin	State Program	5	999917270

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

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Method Summary

Client: GEOTEK ENGINEERING & TESTING SERVICES
Project/Site: 91-400

TestAmerica Job ID: CUL0713

1

Method	Method Description	Protocol	Laboratory
SW 8260B	Volatile Organic Compounds	TAL CF	
SW 9041	VOC Preservation Check	TAL CF	

Protocol References:

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL 800-750-2401

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13

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone: 319 - 277 - 2401 or 1 - 800 - 750 - 2401
Fax: 319 - 277 - 2425

Company: Geotek Engineering & Testing Services
 Send Report To: Keith Delange
 Address: 909 East 50th Street
 City/State/Zip Code: Sioux Falls, SD 57104
 Telephone Number: 605-335-5512 Fax: 605-335-0773
 Sampled by: (Print Name) Jeff Tharheim
 (Signature) Jeff Tharheim
 Your PO #: _____
 Invoice To: Geotek
 TA Quote #: _____
 Project Name: Vogel's
 Project Number: 91-400
 Project Mgr. Email: kdelange @geotekeng.com
 Proj. Mgr. Telephone: 605-335-5512

Sample ID	Date Sampled	Time Sampled	# of containers shipped	Grab	Composite	Field Filtered	Ice	Preservative			Matrix			Analyze For:			RUSH TAT (Must call ahead!)	Standard TAT	E-mail results	Fax Results	Send QC with report
								HNO ₃ (Red & White Label)	HCl (Blue & White Label)	NaOH (Orange & White Label)	H ₂ SO ₄ Plastic (Yellow & White Label)	H ₂ SO ₄ Glass (Yellow & White Label)	None (Black & White Label)	Other (Specify)	Groundwater	Wastewater	Drinking Water	Sludge	Soil	Other Specie:	
Gmn 6	12-9-11	11:15	2ea 6		X										X						
Gmn 7R	X	10:45	X				X								X						
Gmn 9R	X	12:30	X												X						
Gmn 15	X	11:45	X												X						
Gmn 17	X	12:00	X												X						
Gmn 19	X	11:00	L												X						
Gmn 20	X	10:10	X												X						
Gmn 21	X	10:40	X												X						
Gmn 25	X	9:30	L												X						

NOTE: All turn around times are calculated from the time of receipt at TestAmerica

NOTICE: Pre-Arrangements must be made AT LEAST 48 Hours in ADVANCE to receive results with RUSH turn around time commitments; additional charges may be assessed.

NOTE: There may be a charge assessed for TestAmerica disposing of sample remainder

Relinquished by	Date	Time	Received by	Date	Time	Relinquished by	Date	Time
JM Th	11-12-11	3:00						

Shipped Via:	Comments:	Shipped Via:
Received for TestAmerica by	Date	Time

Wylene Cassman 12/13/11 9:17

NOTES:

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone: 319 - 277 - 2401 or 1 - 800 - 750 - 2401
Fax: 319 - 277 - 2425

Company: Géotek Engineering & Testing Services Your PO #: _____
Send Report To: Kerth Delange Invoice To: Géotek
Address: 909 East 50th Street TA Quote #: _____
City/State/Zip Code: Sioux Falls, SD 57104 Project Name: Vogel's
Telephone Number: 605-335-5512 Fax: 605-335-0773 Project Number: 91-400
Sampled by: (Print Name) Jeff Thurber Project Mgr. Email: k.delange @geotekeng.com
(Signature) Jeff Thurber Proj. Mgr. Telephone: 605-335-5512

NOTE: All turn around times are calculated from the time of receipt at TestAmerica.

NOTICE: Pre-Arrangements must be made AT LEAST 48 Hours in ADVANCE to receive results with RUSH turn around time commitments; additional charges may be assessed.

NOTE: There may be a charge assessed for TestAmerica disposing of sample remainder

NOTES

NOTE: There may be a charge assessed for TestAmerica disposing of sample remains.			Date	Time	Received by	Date	Time	Relinquished by	Date	Time		
<i>M. Johnson</i>	12-12-11	7:30										
Shipped Via:			Comments:		Shipped Via:							
Received for TestAmerica by			Date	Time	Temperature Upon Receipt	Laboratory Comments						
<i>Wendy Facciava</i>	12/13/11	9:17										

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

704 ENTERPRISE DRIVE • CEDAR FALLS, IA 50613
800-750-2401 • 319-277-2425 FAX

Sample Receipt and Temperature Log Form

Client: GEOTEK

Project: VOGELS

City: _____

Date: 2-13-11 Receiver's Initials: CH Time (Delivered): 9:17

Temperature Record:

Cooler ID# (If Applicable)
<u>Client</u>
<u>2.1° °C On Ice</u>

Temp Blank

Temperature out of compliance

Thermometer:

- IR - 111531565 'D'
- IR - 111531506 'E'
- IR - 61854108 'Front'
- 101681126

Courier:

- | | |
|--|--|
| <input type="checkbox"/> UPS | <input type="checkbox"/> TA Courier |
| <input checked="" type="checkbox"/> FedEx | <input type="checkbox"/> TA Field Services |
| <input type="checkbox"/> FedEx Ground | <input type="checkbox"/> Client |
| <input type="checkbox"/> US Postal Service | <input type="checkbox"/> Other |
| <input type="checkbox"/> Spee-Dee | |

Custody seals present?

Yes

Custody seals intact?

Yes No

Non-Conformance report started

Exceptions Noted

- | |
|---|
| <input type="checkbox"/> Sample(s) not received in a cooler. |
| <input type="checkbox"/> Samples(s) received same day of sampling. |
| <input type="checkbox"/> Evidence of a chilling process |
| <input type="checkbox"/> No Temp. Blank. Inside temperature of cooler recorded. |
| <input type="checkbox"/> Temperature not taken: |

*Refer to SOP CF-SS-01 for Temperature Criteria